

## **Yacovone, Krista**

---

**From:** Carrie McGowan <Carrie.McGowan@ehs-support.com>  
**Sent:** Friday, August 30, 2013 8:33 AM  
**To:** Gorin, Jonathan  
**Cc:** 'jmhoffman@ashland.com'  
**Subject:** FW: One question  
**Attachments:** Final LCP HHRA RAGS D Tables (5-11-11).xlsx

Jon,  
Hope this helps!  
C

---

**From:** Meghan Schuck [mailto:[mschuck@Geosyntec.com](mailto:mschuck@Geosyntec.com)]  
**Sent:** Thursday, August 29, 2013 10:25 AM  
**To:** Carrie McGowan  
**Cc:** jmhoffman@ashland.com  
**Subject:** RE: One question

Hi Carrie,  
The Final RAGS D Tables are attached.  
-Meghan

**Meghan Schuck**  
Project Scientist

---

134 North LaSalle Street, Suite 300  
Chicago, Illinois 60602  
Office: 312.416.3905  
Mobile: 813.335.5236  
Fax: 312.658.0576  
[www.Geosyntec.com](http://www.Geosyntec.com)



This electronic mail message contains information that (a) is or may be LEGALLY PRIVILEGED, CONFIDENTIAL, PROPRIETARY IN NATURE, OR OTHERWISE PROTECTED BY LAW FROM DISCLOSURE, and (b) is intended only for the use of the Addressee(s) named herein. If you are not the intended recipient, an addressee, or the person responsible for delivering this to an addressee, you are hereby notified that reading, using, copying, or distributing any part of this message is strictly prohibited. If you have received this electronic mail message in error, please contact us immediately and take the steps necessary to delete the message completely from your computer system.

---

**From:** Carrie McGowan [<mailto:Carrie.McGowan@ehs-support.com>]  
**Sent:** Thursday, August 29, 2013 8:53 AM  
**To:** Meghan Schuck  
**Cc:** [jmhoffman@ashland.com](mailto:jmhoffman@ashland.com)  
**Subject:** Fwd: One question

Can you provide this to me?

Sent from my iPhone

Begin forwarded message:

**From:** "Gorin, Jonathan" <[Gorin.Jonathan@epa.gov](mailto:Gorin.Jonathan@epa.gov)>  
**Date:** August 29, 2013, 9:38:49 AM EDT  
**To:** Carrie McGowan <[Carrie.McGowan@ehs-support.com](mailto:Carrie.McGowan@ehs-support.com)>, "John M. Hoffman"  
<[jmhoffman@ashland.com](mailto:jmhoffman@ashland.com)>  
**Subject: FW: One question**

Hey Carrie, John. Could you send me the tables below so I can forward them to Lora.

Thanks, jon

---

**From:** Smith, Lora  
**Sent:** Wednesday, August 28, 2013 1:32 PM  
**To:** Gorin, Jonathan  
**Subject:** RE: One question

Hey Jon,

Think there's any way we could get our hands on the Excel version of the RAGS Part D tables from the risk assessment? It would make my life easier putting the ROD tables together. Let me know. Thanks.

\*\*\*\*\*

Regards,  
Lora M. Smith-Staines, Ph.D.  
U.S. Environmental Protection Agency, Region 2  
Emergency and Remedial Response Division  
Superfund Program  
290 Broadway, 18th Fl.  
New York, N.Y. 10007

212.637.4299 (office)  
212.637.3083 (fax)

**TABLE OF CONTENTS**  
**FINAL HUMAN HEALTH RISK ASSESSMENT - RAGS PART D TABLES**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Table 0:	Site Risk Assessment Identification Information
Table 1:	Selection of Exposure Pathways
Table 2.1:	Occurrence, Distribution, and Selection of Chemicals of Potential Concern, Surface Soil
Table 2.2:	Occurrence, Distribution, and Selection of Chemicals of Potential Concern, Subsurface Soil
Table 2.3:	Occurrence, Distribution, and Selection of Chemicals of Potential Concern, Overburden Groundwater
Table 2.4:	Occurrence, Distribution, and Selection of Chemicals of Potential Concern, South Branch Creek Sediment/Bank Soil
Table 3.1:	Exposure Point Concentration Summary, Surface Soil
Table 3.2:	Exposure Point Concentration Summary, Subsurface Soil
Table 3.3:	Exposure Point Concentration Summary, Overburden Groundwater
Table 3.4:	Exposure Point Concentration Summary, South Branch Creek Sediment/Bank Soil
Table 4.1a:	Values Used for Daily Intake Calculations, Future Commercial/Industrial Worker - Surface Soil
Table 4.1b:	Values Used for Daily Intake Calculations, Future Commercial/Industrial Worker - Groundwater
Table 4.2:	Values Used for Daily Intake Calculations, Future Site-Specific Worker - Surface Soil
Table 4.3a:	Values Used for Daily Intake Calculations, Future Construction/Utility Worker - Mixed Soil
Table 4.3b:	Values Used for Daily Intake Calculations, Future Construction/Utility Worker - Shallow (Overburden) Groundwater
Table 4.4:	Values Used for Daily Intake Calculations, Current/Future Trespasser - South Branch Creek Sediment/Bank Soil
Table 5.1:	Non-Cancer Toxicity Data - Oral/Dermal
Table 5.2:	Non-Cancer Toxicity Data - Inhalation
Table 6.1:	Cancer Toxicity Data - Oral/Dermal
Table 6.2:	Cancer Toxicity Data - Inhalation
Table 7.1:	Calculation of Chemical Cancer Risks and Non-Cancer Hazards, Future Commercial/Industrial Worker - Surface Soil and Overburden Groundwater
Table 7.2:	Calculation of Chemical Cancer Risks and Non-Cancer Hazards, Future Site-Specific Worker - Surface Soil
Table 7.3:	Calculation of Chemical Cancer Risks and Non-Cancer Hazards, Future Construction/Utility Worker - Mixed Soil and Shallow (Overburden) Groundwater
Table 7.4:	Calculation of Chemical Cancer Risks and Non-Cancer Hazards, Current/Future Trespasser - South Branch Creek Sediment/Bank Soil
Table 9.1:	Summary of Receptor Risks and Hazards for COPCs, Future Commercial/Industrial Worker - Surface Soil and Overburden Groundwater
Table 9.2:	Summary of Receptor Risks and Hazards for COPCs, Future Site-Specific Worker - Surface Soil
Table 9.3:	Summary of Receptor Risks and Hazards for COPCs, Future Construction/Utility Worker - Mixed Soil and Shallow (Overburden) Groundwater
Table 9.4:	Summary of Receptor Risks and Hazards for COPCs, Current/Future Trespasser - South Branch Creek Sediment/Bank Soil
Table 10.1:	Risk Summary, Future Commercial/Industrial Worker - Surface Soil and Overburden Groundwater
Table 10.2:	Risk Summary, Future Site-Specific Worker - Surface Soil
Table 10.3:	Risk Summary, Future Construction/Utility Worker - Mixed Soil and Shallow (Overburden) Groundwater
Table 10.4:	Risk Summary, Current/Future Trespasser - South Branch Creek Sediment/Bank Soil

**TABLE 0**  
**SITE RISK ASSESSMENT IDENTIFICATION INFORMATION**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Site Name/OU:	LCP Chemicals, Inc. Superfund Site
Region:	USEPA Region II
EPA ID Number:	NJD079303020
State:	New Jersey
Status:	
Federal Facility (Y/N):	N
EPA Project Manager:	Jonathan Gorin [Gorin.Jonathan@epamail.epa.gov]
EPA Risk Assessor:	Michael Sivak [Sivak.Michael@epamail.epa.gov]
Prepared by (Organization):	Geosyntec Consultants, Inc. [Ktolson@Geosyntec.com or MDeFlaun@Geosyntec.com]
Prepared for (Organization):	ISP Environmental Services, Inc. [dmcnichol@ispcorp.com]
Document Title:	Final Human Health Risk Assessment
Document Date:	20 May 2011
Probabilistic Risk Assessment (Y/N):	No
Comments:	The HHRA is a companion document to the Remedial Investigation (RI) Report prepared and submitted to the U.S. Environmental Protection Agency (USEPA) by Brown and Caldwell. Portions of the RI Report relevant to the evaluation of human health risks are summarized in the HHRA; however, the full context of site-specific information requires the HHRA to be evaluated in light of the complete RI Report. Therefore, the reader should refer to the RI Report for a more comprehensive presentation and analysis of the Phase I (2001-2002) and Phase II (2006-2007) RI data.

**TABLE 1**  
**SELECTION OF EXPOSURE PATHWAYS**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Scenario Timeframe	Medium	Exposure Medium	Exposure Point	Receptor Population	Receptor Age	Exposure Route	Type of Analysis	Rationale for Selection of Exposure Pathway
Future	Surface Soil <sup>(1)</sup>	Surface Soil	Surface Soil	Commercial/Industrial Worker	Adult	Ingestion Dermal Contact	Quant <sup>(2)</sup>	Commercial/industrial workers may incidentally ingest surface soil. Commercial/industrial workers may have exposed skin come into contact with surface soil.
		Outdoor Air	Particulates and Vapors (P&V) in Outdoor Air	Commercial/Industrial Worker	Adult	Inhalation	Quant <sup>(2)</sup>	Commercial/industrial workers may inhale particulates in fugitive dust generated from surface soil or inhale vapors that migrate from surface soil to air.
	Surface Soil <sup>(1)</sup>	Surface Soil	Surface Soil	Site-Specific Worker <sup>(3)</sup>	Adult	Ingestion Dermal Contact	Quant <sup>(2)</sup>	Site-specific workers may incidentally ingest surface soil. Site-specific workers may have exposed skin come into contact with surface soil.
		Outdoor Air	P&V in Outdoor Air	Site-Specific Worker <sup>(3)</sup>	Adult	Inhalation	Quant <sup>(2)</sup>	Site-specific workers may inhale particulates in fugitive dust generated from surface soil or inhale vapors that migrate from surface soil to air.
	Surface Soil <sup>(4)</sup>	Surface Soil	Surface Soil	Construction/ Utility Worker	Adult	Ingestion Dermal Contact	Quant <sup>(2)</sup>	Construction/utility workers may incidentally ingest surface soil. Construction/utility workers may have exposed skin come into contact with surface soil.
		Outdoor Air	P&V in Outdoor Air	Construction/ Utility Worker	Adult	Inhalation	Quant <sup>(2)</sup>	Construction/utility workers may inhale particulates in fugitive dust generated from surface soil or inhale vapors that migrate from surface soil to air.
	Subsurface Soil <sup>(4)</sup>	Subsurface Soil	Subsurface Soil	Construction/ Utility Worker	Adult	Ingestion Dermal Contact	Quant <sup>(2)</sup>	Construction/utility workers may incidentally ingest subsurface soil. Construction/utility workers may have exposed skin come into contact with subsurface soil.
		Outdoor Air	P&V in Outdoor Air	Construction/ Utility Worker	Adult	Inhalation	Quant <sup>(2)</sup>	Construction/utility workers may inhale particulates in fugitive dust generated from subsurface soil or inhale vapors that migrate from subsurface soil to air.
	Groundwater	Overburden Groundwater <sup>(5)</sup>	Overburden Groundwater	Commercial/Industrial Worker	Adult	Ingestion	Quant	Future commercial/industrial worker ingestion of groundwater was quantitatively evaluated to support remedial decisions-making and risk management processes.
		Shallow Groundwater <sup>(6)</sup>	Shallow Groundwater	Construction/ Utility Worker	Adult	Ingestion	Qual	Construction/utility worker incidental ingestion of shallow (overburden) groundwater while conducting construction/excavation activities near the water table is likely to be relatively insignificant in comparison to dermal contact with groundwater; therefore, this pathway is qualitatively evaluated as part of the uncertainty analysis.
		Shallow Groundwater <sup>(6)</sup>	Shallow Groundwater	Construction/ Utility Worker	Adult	Dermal Contact	Quant	Construction/utility workers may have exposed skin come into contact with shallow (overburden) groundwater while conducting construction/excavation activities near the water table.
		Shallow Groundwater <sup>(6)</sup>	Vapors in Outdoor Air	Construction/ Utility Worker	Adult	Inhalation	Qual	Construction/utility worker inhalation of vapors from shallow (overburden) groundwater while conducting construction/excavation activities near the water table is likely to be relatively insignificant in comparison to dermal contact with groundwater; therefore this pathway is qualitatively evaluated as part of the uncertainty analysis. Areas of the Site containing visible elemental mercury are assumed to present an unacceptable risk.
Future	Surface Soil <sup>(1)</sup>	Surface Soil	Surface Soil	Adolescent Trespasser	Adult	Ingestion Dermal Contact	Qual	Under future land use conditions, the likelihood for trespassing may increase if current barriers to access (e.g., fencing) are removed. Thus, future trespassers may incidentally ingest, have dermal contact with, or inhale particulates and vapors from soil. However, because exposure is likely to be infrequent and remedial actions protective of worker will also be protective of trespassers, this receptor-exposure scenario is qualitatively evaluated.
Future		Outdoor Air	P&V in Outdoor Air	Adolescent Trespasser	Adult	Inhalation	Qual	
Current/Future	Surficial Sediment in/along South	Surficial Sediment in/along SBC	Surficial Sediment in/along SBC	Adolescent Trespasser	Ages 7-16	Ingestion Dermal Contact	Quant	Trespassers may incidentally ingest sediment. Trespassers may have exposed skin come into contact with sediment.
Current/Future	Surface Water in South Branch Creek	Surface Water in SBC	Surface Water in SBC	Adolescent Trespasser	Ages 7-16	Ingestion	Qual	Trespassers may incidentally ingest surface water; however, this pathway is evaluated qualitatively as part of the uncertainty analysis as trespasser exposure to surface water is likely to be insignificant relative to sediment exposure.
						Dermal Contact		Trespassers may have exposed skin come into contact with surface water; however, this pathway is evaluated qualitatively as part of the uncertainty analysis as trespasser exposure to surface water is likely to be insignificant relative to sediment exposure.
Future	Subsurface Soil Vapors <sup>(8)</sup>	Subsurface Soil Vapors	Vapors in Indoor Air	Indoor Worker	Adult	Inhalation	Quant <sup>(2)</sup>	Indoor workers may inhale vapors that migrate from the subsurface to indoor air via diffusion, advection, or as a result of heating and ventilation systems.

**Notes:**

- (1) Surface soil includes all soil from the interval 0 to 2 feet below ground surface (ft bgs) not associated with South Branch Creek (SBC).
- (2) Areas of visible elemental mercury contamination could not be quantitatively evaluated. For the purposes of this baseline risk assessment, areas with visible elemental mercury were assumed to present an unacceptable risk based on potential direct contact and vapor intrusion pathways. Risks attributed to these areas are based on current (i.e., unremediated) Site conditions.
- (3) In addition to the full-time commercial/industrial worker, a reduced-frequency commercial/industrial ("site-specific") worker was also evaluated. Although this scenario is hypothetical, and it is acknowledged that such future land use would require institutional controls, the evaluation of this receptor supports remedial decision-making and risk management process.
- (4) Subsurface soil includes all soil from the interval 2 to 10 ft bgs not associated with SBC.
- (5) The bedrock water-bearing zone at the Site has formally been reclassified as Class III-B (non-potable). Future use of overburden groundwater for potable purposes is also unlikely given the salinity and New Jersey regulations. However, the overburden water-bearing zone remains classified as Class II-A (potable). Therefore, future commercial/industrial worker ingestion of overburden groundwater was quantitatively evaluated to provide risk managers with information needed to evaluate the impact of any future changes in groundwater use at the Site.
- (6) Future construction/utility workers are assumed to be exposed to shallow groundwater while conducting intrusive activities at the Site. For the purposes of the risk assessment, "shallow" groundwater was assumed to include all overburden groundwater.
- (7) Sediment includes all solid media (sediment, bank soil, marsh soil) associated with SBC collected from the interval 0 to 0.5 ft bgs.
- (8) Because elemental mercury (which is expected to be the primary risk driver for indoor air) is not soluble, modeling risks from groundwater to indoor air is inappropriate as it would likely result in a gross underestimation of risks from vapor intrusion. Rather, exposure to indoor air was evaluated using soil vapor data and the Johnson and Ettinger (J&E; 1991) vapor intrusion model.
- (9) With the exception of subsurface soil vapors, risk associated with environmental media at the Site are presented herein in tabular form in accordance with the standard tables of RAGS Part D. Risks associated with exposure to soil vapors are presented in Attachment E.

**TABLE 2.1**  
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN**  
**SURFACE SOIL (0 to 2 ft bgs)**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Class	CAS No.	Constituent	Minimum Concentration <sup>(1)</sup> (Qualifier)	Maximum Concentration <sup>(1)</sup> (Qualifier)	Units	Location of Maximum	Frequency of Detection	Range of Detection Limits	Screening Concentration <sup>(2)</sup>	Screening Value (Basis) <sup>(3)</sup>	Alternate Screening Values <sup>(4)</sup>	COPC	Rationale <sup>(5)</sup>				
Metal	7429-90-5	Aluminum	1,120	27,700	mg/kg	LHP-128	231 / 231	n/a	27,700	7,700	n	--	Yes	ASL			
Metal	7440-36-0	Antimony	1.2	J	212	J	mg/kg	LB-101	45 / 234	0.54 - 5.7	212	3.1	n	14	Yes	ASL	
Metal	7440-38-2	Arsenic	1.1		335	J	mg/kg	LHP-105	230 / 235	1.0 - 2.4	335	0.39	c	20	Yes	ASL	
Metal	7440-39-3	Barium	26.8		10,500		mg/kg	LP-5	225 / 227	21 - 22	10,500	1,500	n	700	Yes	ASL	
Metal	7440-41-7	Beryllium	0.56		53.3	J	mg/kg	LB-101	124 / 235	0.011 - 2.3	53.3	16	n	2.0	Yes	ASL	
Metal	7440-43-9	Cadmium	0.58		87.5	J	mg/kg	DC-SED3	158 / 235	0.056 - 14	87.5	7.0	n	39	Yes	ASL	
Metal	7440-70-2	Calcium	597	J	105,000		mg/kg	SILO-B2	220 / 228	540 - 620	105,000	NSC		--	No	NUT	
Metal	7440-47-3	Chromium	(6)	4.7	344	J	mg/kg	DC-SED3	235 / 235	n/a	344	12,000	n	120,000	No	BSL	
Metal	18540-29-9	Chromium, Hexavalent	1.3		7.3	J	mg/kg	LHP-108	9 / 24	0.26 - 1.3	7.3	0.29	c	240	Yes	ASL	
Metal	7440-48-4	Cobalt	5.6		961		mg/kg	LHP-128	218 / 235	5.4 - 6.1	961	2.3	n	--	Yes	ASL	
Metal	7440-50-8	Copper	6.6		18,000		mg/kg	DC-SED2	226 / 226	n/a	18,000	310	n	600	Yes	ASL	
Metal	7439-89-6	Iron	2,020		374,000		mg/kg	DC-SS1	235 / 235	n/a	374,000	5,500	n	--	Yes	ASL	
Metal	7439-92-1	Lead	3.2		15,450		mg/kg	LHP-128	235 / 235	n/a	15,450	400	++	400	Yes	ASL	
Metal	7439-95-4	Magnesium	692		25,500		mg/kg	230-B10	225 / 231	540 - 580	25,500	NSC		--	No	NUT	
Metal	7439-96-5	Manganese	7.1		4,810	J	mg/kg	DC-SED3	235 / 235	n/a	4,810	180	n	--	Yes	ASL	
Metal	7439-97-6	Mercury	(6)	0.041	J	7,870		mg/kg	SS-08-10	234 / 237	0.032 - 0.035	7,870	0.56	n	14	Yes	ASL
Metal	22967-92-6	Methyl Mercury	0.0000309		0.125		mg/kg	230-B101	11 / 11	n/a	0.125	0.78	n	--	No	BSL	
Metal	7440-02-0	Nickel	5.7		1,820		mg/kg	150K-1	232 / 235	4.3 - 4.5	1,820	150	n	250	Yes	ASL	
Metal	7440-09-7	Potassium	517		5,900		mg/kg	5K-B1	175 / 227	500 - 1,900	5,900	NSC		--	No	NUT	
Metal	7782-49-2	Selenium	1		21.1		mg/kg	LB-101	60 / 235	0.66 - 53	21.1	39	n	63	No	BSL	
Metal	7440-22-4	Silver	1.1		53.2	J	mg/kg	DC-SED3	52 / 235	0.079 - 4.6	53.2	39	n	110	Yes	ASL	
Metal	7440-23-5	Sodium	561		7,980	J	mg/kg	HB-102A	139 / 226	49 - 26,000	7,980	NSC		--	No	NUT	
Metal	7440-62-2	Vanadium	10		249		mg/kg	TLS-6	232 / 235	27 - 140	249	0.55	n	370	Yes	ASL	
Metal	7440-66-6	Zinc	6.5		114,000		mg/kg	LHP-127	211 / 211	n/a	114,000	2,300	n	1,500	Yes	ASL	
Inorganic	57-12-5	Cyanide	0.26		25.9	J	mg/kg	240-1	9 / 235	0.012 - 4.1	25.9	160	n	1,100	No	BSL	
PCB	NA	Total PCBs	(7)	0.0115	28.8		mg/kg	230-B4	235 / 235	n/a	28.8	0.24	c	0.49	Yes	ASL	
PEST	319-84-6	Alpha-BHC		0.0056	J	0.0148		mg/kg	SPR-4C	2 / 235	0.00025 - 0.20	0.0148	0.077	c	--	No	BSL
PEST	5103-71-9	Alpha-Chlordane	(6)	0.0013		0.0232	J	mg/kg	WWT-3	10 / 235	0.00037 - 0.39	0.0232	1.6	c	--	No	BSL
PEST	319-85-7	Beta-BHC		0.0078		0.144	J	mg/kg	DC-SS18	11 / 235	0.00030 - 0.40	0.144	0.27	c	--	No	BSL
PEST	319-86-8	Bhc, Delta Isomer	(6)	0.0122		0.0122		mg/kg	SPR-4C	1 / 235	0.00051 - 0.20	0.0122	0.077	c	--	No	BSL
PEST	58-89-9	Bhc, Gamma Isomer		0.0067		0.0207	J	mg/kg	ADS-4	3 / 235	0.00028 - 0.20	0.0207	0.52	c	0.52	No	BSL
PEST	60-57-1	Dieldrin		0.0009		0.0881		mg/kg	SPR-4C	10 / 235	0.00035 - 0.20	0.0881	0.03	c	0.042	No	IFD
PEST	33213-65-9	Endosulfan II	(6)	0.0012		0.0023		mg/kg	ADS-1	2 / 234	0.00036 - 0.39	0.0023	37	n	340	No	BSL
PEST	1031-07-8	Endosulfan Sulfate	(6)	0.0251	J	0.0251	J	mg/kg	TLS-7	1 / 235	0.00037 - 0.39	0.0251	37	n	340	No	BSL
PEST	53494-70-5	Endrin Ketone	(6)	0.128	J	0.128	J	mg/kg	TLS-7	1 / 235	0.00038 - 0.39	0.128	1.8	n	17	No	BSL
PEST	5103-74-2	Gamma-Chlordane	(6)	0.00074		0.0193		mg/kg	PCA-3	12 / 235	0.00037 - 0.39	0.0193	1.6	c	--	No	BSL
PEST	1024-57-3	Heptachlor Epoxide		0.0019	J	0.0115	J	mg/kg	TLS-7	2 / 235	0.00038 - 0.20	0.0115	0.053	c	--	No	BSL
PEST	72-43-5	Methoxychlor		0.0108		0.583	J	mg/kg	RR-11	10 / 235	0.00046 - 0.79	0.583	31	n	280	No	BSL
PEST	72-54-8	P,P'-DDD		0.0016	J	0.184	J	mg/kg	SPR-4C	37 / 235	0.00033 - 0.39	0.184	2	c	3.0	No	BSL
PEST	72-55-9	P,P'-DDE		0.0017		0.289	J	mg/kg	231-B3	54 / 235	0.00034 - 0.21	0.289	1.4	c	2.0	No	BSL
PEST	50-29-3	P,P'-DDT		0.0026		1.46	J	mg/kg	231-B9	77 / 235	0.00043 - 0.39	1.46	1.7	c	2.0	No	BSL
Dioxin	NA	Dioxin 2,3,7,8-TCDD TEQ	(8)	6.2E-07		2.1E-05		mg/kg	231-B1	14 / 14	n/a	2.1E-05	4.50E-06	c	--	Yes	ASL
Furan	NA	Furan 2,3,7,8-TCDD TEQ	(8)	2.0E-07		8.8E-04		mg/kg	LP-16	14 / 14	n/a	8.8E-04	4.50E-06	c	--	Yes	ASL
SVOC	NA	Benzo(a)pyrene TEQ	(9)	0.0179		101		mg/kg	SPR-5	235 / 235	n/a	101	0.015	c	0.66	Yes	ASL
SVOC	83-32-9	Acenaphthene		0.0201	J	22.4		mg/kg	DC-SS11	56 / 235	0.017 - 0.78	22.4	340	n	3,400	No	BSL
SVOC	208-96-8	Acenaphthylene	(6)	0.0186	J	0.552		mg/kg	DC-SS11	40 / 235	0.014 - 2.1	0.552	340	n	--	No	BSL
SVOC	98-86-2	Acetophenone		0.146	J	0.146	J	mg/kg	TES-3	1 / 45	0.022 - 0.26	0.146	780	n	--	No	BSL
SVOC	120-12-7	Anthracene		0.0104	J	21.1		mg/kg	SPR-5	140 / 235	0.013 - 0.47	21.1	1,700	n	10,000	No	BSL
SVOC	191-24-2	Benzo(g,h,i)perylene	(6)	0.019	J	26.4		mg/kg	SPR-5	117 / 234	0.019 - 0.47	26.4	170	n	--	No	BSL
SVOC	92-52-4	Biphenyl, 1,1'		0.0301	J	0.0366	J	mg/kg	HB-102B	2 / 45	0.016 - 0.20	0.0366	390	n	--	No	BSL
SVOC	117-81-7	Bis(2-Ethylhexyl) Phthalate		0.0378	J	129	J	mg/kg	DC-SED1	169 / 235	0.044 - 0.52	129	35	c	49	Yes	ASL
SVOC	85-68-7	Butyl Benzyl Phthalate		0.0405	J	3.57		mg/kg	231-B9	21 / 235	0.026 - 2.1	3.57	260	c	1,100	No	BSL
SVOC	86-74-8	Carbazole	(10)	0.0158	J	5.62		mg/kg	TLN-3	67 / 235	0.014 - 0.47	5.62	24	c	--	No	BSL

**TABLE 2.1**  
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN**  
**SURFACE SOIL (0 to 2 ft bgs)**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Class	CAS No.	Constituent	Minimum Concentration <sup>(1)</sup> (Qualifier)	Maximum Concentration <sup>(1)</sup> (Qualifier)	Units	Location of Maximum	Frequency of Detection	Range of Detection Limits	Screening Concentration <sup>(2)</sup>	Screening Value (Basis) <sup>(3)</sup>	Alternate Screening Values <sup>(4)</sup>	COPC	Rationale <sup>(5)</sup>			
SVOC	106-47-8	Chloroaniline, p-	0.112	J	0.183	J	mg/kg	5K-B5	2 / 235	0.021 - 5.2	0.183	2.4	c	230	No	BSL
SVOC	91-58-7	Chloronaphthalene, 2-	0.0243	J	76.8		mg/kg	5K-B5	47 / 235	0.048 - 2.1	76.8	630	n	--	No	BSL
SVOC	132-64-9	Dibenzofuran	0.018	J	14.2		mg/kg	TLN-3	64 / 235	0.016 - 0.78	14.2	7.8	n	--	Yes	ASL
SVOC	95-50-1	Dichlorobenzene, 1,2-	0.0208	J	2.13		mg/kg	DC-SS11	55 / 235	0.016 - 2.1	2.13	190	n	5,100	No	BSL
SVOC	541-73-1	Dichlorobenzene, 1,3-	0.0227	J	3.27		mg/kg	DC-B12	17 / 235	0.020 - 2.1	3.27	NSC		5,100	No	BSL2
SVOC	106-46-7	Dichlorobenzene, 1,4-	0.0224	J	4.17		mg/kg	DC-SS11	25 / 235	0.015 - 2.1	4.17	2.4	c	570	Yes	ASL
SVOC	84-66-2	Diethyl Phthalate	0.0558	J	0.0558	J	mg/kg	BT-B2	1 / 235	0.015 - 2.1	0.0558	4,900	n	10,000	No	BSL
SVOC	131-11-3	Dimethyl Phthalate	0.043	J	4.34		mg/kg	TES-3	36 / 235	0.015 - 2.1	4.34	NSC		10,000	No	BSL2
SVOC	84-74-2	Di-N-Butyl Phthalate	0.0404	J	23		mg/kg	BT-B2	29 / 235	0.022 - 2.1	23	610	n	5,700	No	BSL
SVOC	121-14-2	Dinitrotoluene, 2,4-	0.0857		0.0857		mg/kg	230-B7	1 / 235	0.040 - 2.1	0.0857	1.6	c	1.0	No	BSL
SVOC	117-84-0	Di-N-Octyl Phthalate	0.041	J	0.041	J	mg/kg	LHP-128	1 / 231	0.029 - 2.1	0.041	NSC		1,100	No	BSL2
SVOC	206-44-0	Fluoranthene	0.0172	J	116		mg/kg	SPR-5	199 / 235	0.012 - 0.46	116	230	n	2,300	No	BSL
SVOC	86-73-7	Fluorene	0.0182	J	17.3		mg/kg	DC-SS11	57 / 235	0.014 - 0.78	17.3	230	n	2,300	No	BSL
SVOC	118-74-1	Hexachlorobenzene	0.0238	J	1,440		mg/kg	231-B13	129 / 235	0.020 - 2.1	1,440	0.3	c	0.66	Yes	ASL
SVOC	87-68-3	Hexachlorobutadiene	0.0256	J	95.9		mg/kg	231-B2	40 / 235	0.022 - 2.1	95.9	6.2	c	1.0	Yes	ASL
SVOC	67-72-1	Hexachloroethane	0.023	J	1.27		mg/kg	ADS-8	46 / 235	0.017 - 5.2	1.27	35	c	6.0	No	BSL
SVOC	91-57-6	Methylnaphthalene, 2-	0.0192	J	23.6		mg/kg	TLN-3	71 / 235	0.022 - 2.1	23.6	31	n	--	No	BSL
SVOC	91-20-3	Naphthalene	0.0181	J	51.2		mg/kg	DC-SS11	105 / 235	0.019 - 2.1	51.2	3.6	c	230	Yes	ASL
SVOC	100-01-6	Nitroaniline, 4-	0.648		0.648		mg/kg	LHP-105	1 / 235	0.024 - 5.2	0.648	24	c	--	No	BSL
SVOC	98-95-3	Nitrobenzene	0.0576	J	0.366		mg/kg	AB-2	3 / 235	0.024 - 2.1	0.366	4.8	c	28	No	BSL
SVOC	86-30-6	N-Nitrosodiphenylamine	0.0489	J	0.34		mg/kg	230-B7	2 / 235	0.014 - 5.2	0.34	99	c	140	No	BSL
SVOC	87-86-5	Pentachlorophenol	0.154	J	2.02	J	mg/kg	DC-SED1	8 / 235	0.038 - 21	2.02	0.89	c	6.0	No	IFD
SVOC	85-01-8	Phenanthrene <sup>(6)</sup>	0.0184	J	58.2		mg/kg	TLN-3	184 / 235	0.015 - 0.46	58.2	170	n	--	No	BSL
SVOC	129-00-0	Pyrene	0.0151	J	122		mg/kg	SPR-5	201 / 235	0.012 - 0.46	122	170	n	1,700	No	BSL
SVOC	120-82-1	Trichlorobenzene, 1,2,4-	0.0217	J	3.09		mg/kg	230-B5	84 / 235	0.015 - 2.1	3.09	22	c	68	No	BSL
SVOC	95-95-4	Trichlorophenol, 2,4,5-	0.105	J	0.105	J	mg/kg	AB-1	1 / 235	0.051 - 5.2	0.105	610	n	5,600	No	BSL
VOC	71-55-6	Trichloroethane, 1,1,1-	0.0074		1.11		mg/kg	TES-4	2 / 235	0.0034 - 0.64	1.11	870	n	210	No	BSL
VOC	75-34-3	Dichloroethane, 1,1-	0.0048	J	0.164	J	mg/kg	TES-4	5 / 235	0.0034 - 0.64	0.164	3.3	c	570	No	BSL
VOC	75-35-4	Dichloroethene, 1,1-	0.00067	J	0.0186		mg/kg	12K-B1	7 / 235	0.0034 - 0.64	0.0186	24	n	8.0	No	BSL
VOC	78-93-3	Butanone, 2- (MEK)	0.005		0.389	J	mg/kg	DC-SED3	38 / 235	0.0042 - 0.64	0.389	2,800	n	1,000	No	BSL
VOC	591-78-6	Hexanone, 2-	0.0063		0.0244	J	mg/kg	DC-SED3	2 / 235	0.0034 - 0.64	0.0244	21	n	--	No	BSL
VOC	108-10-1	4-Methyl-2-Pentanone (MIBK)	0.101	J	0.101	J	mg/kg	DC-SED3	1 / 235	0.0034 - 0.64	0.101	530	n	1,000	No	BSL
VOC	79-20-9	Acetic Acid, Methyl Ester	0.104	J	0.253	J	mg/kg	TES-2	2 / 45	0.061 - 0.22	0.253	7,800	n	--	No	BSL
VOC	67-64-1	Acetone	0.0194		2.94	J	mg/kg	DC-SED3	136 / 235	0.0034 - 2.6	2.94	6,100	n	1,000	No	BSL
VOC	100-52-7	Benzaldehyde	0.246	J	0.246	J	mg/kg	TES-3	1 / 45	0.037 - 0.45	0.246	780	n	--	No	BSL
VOC	71-43-2	Benzene	0.0009		18.9		mg/kg	SPR-4B	59 / 235	0.00067 - 0.25	18.9	1.1	c	3	Yes	ASL
VOC	75-15-0	Carbon Disulfide	0.0023	J	0.16	J	mg/kg	DC-SED3	35 / 235	0.0042 - 0.64	0.16	82	n	--	No	BSL
VOC	56-23-5	Carbon Tetrachloride	0.0164	J	0.0164	J	mg/kg	231-B7	1 / 235	0.0034 - 0.64	0.0164	0.61	c	2.0	No	BSL
VOC	108-90-7	Chlorobenzene	0.00075	J	0.157	J	mg/kg	LHP-113	21 / 235	0.0034 - 0.64	0.157	29	n	37	No	BSL
VOC	67-66-3	Chloroform	0.00092	J	7.22		mg/kg	HB-102B	61 / 235	0.0034 - 0.52	7.22	0.29	c	19	Yes	ASL
VOC	74-87-3	Chloromethane	0.0023	J	0.0023	J	mg/kg	ADS-12	1 / 235	0.0034 - 0.64	0.0023	12	n	520	No	BSL
VOC	156-59-2	Cis-1,2-Dichloroethene	0.0012	J	6.54		mg/kg	12K-B1	17 / 235	0.0034 - 0.64	6.54	16	n	79	No	BSL
VOC	100-41-4	Ethylbenzene	0.0012		0.121		mg/kg	LHP-128	16 / 235	0.00067 - 0.64	0.121	5.4	c	1,000	No	BSL
VOC	98-82-8	Isopropylbenzene	0.0247	J	0.0377	J	mg/kg	LHP-121	2 / 45	0.020 - 0.072	0.0377	210	n	--	No	BSL
VOC	108-87-2	Methylcyclohexane <sup>(6)</sup>	0.0704	J	0.442		mg/kg	LHP-127	8 / 45	0.028 - 0.10	0.442	700	n	--	No	BSL
VOC	75-09-2	Methylene Chloride	0.0064	J	0.201	J	mg/kg	HB-102B	16 / 235	0.0034 - 0.64	0.201	11	c	49	No	BSL
VOC	100-42-5	Styrene	0.0026	J	0.0082		mg/kg	SPR-4B	2 / 235	0.0034 - 0.64	0.0082	630	n	23	No	BSL
VOC	1634-04-4	Tert-Butyl Methyl Ether	0.0705		0.0705		mg/kg	HB-102B	1 / 45	0.024 - 0.087	0.0705	43	c	--	No	BSL
VOC	127-18-4	Tetrachloroethylene (PCE)	0.00079	J	0.763		mg/kg	TLS-7	29 / 235	0.0042 - 0.52	0.763	0.55	c	4.0	Yes	ASL
VOC	108-88-3	Toluene	0.00088	J	0.533		mg/kg	LHP-128	30 / 235	0.00067 - 0.64	0.533	500	n	1,000	No	BSL
VOC	156-60-5	Trans-1,2-Dichloroethene	0.0014	J	0.226		mg/kg	230-B5	7 / 235	0.0034 - 0.64	0.226	15	n	1,000	No	BSL
VOC	79-01-6	Trichloroethylene (TCE)	0.00095	J	124		mg/kg	12K-B2	25 / 234	0.0034 - 0.64	124	2.8	c	23	Yes	ASL
VOC	75-01-4	Vinyl Chloride	0.0036	J	0.154		mg/kg	230-B5	10 / 235	0.0034 - 0.64	0.154	0.06	c	2.0	Yes	ASL

**TABLE 2.1**  
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN**  
**SURFACE SOIL (0 to 2 ft bgs)**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Class	CAS No.	Constituent	Minimum Concentration <sup>(1)</sup> (Qualifier)	Maximum Concentration <sup>(1)</sup> (Qualifier)	Units	Location of Maximum	Frequency of Detection	Range of Detection Limits	Screening Concentration <sup>(2)</sup>	Screening Value (Basis) <sup>(3)</sup>	Alternate Screening Values <sup>(4)</sup>	COPC	Rationale <sup>(5)</sup>			
VOC	XYLMP	Xylene, M&P- (sum of isomers)	<sup>(6)</sup>	0.0792	J	0.449	mg/kg	LHP-128	6 / 45	0.038 - 0.14	0.449	340	n	--	No	BSL
VOC	95-47-6	Xylene, O-		0.0398	J	0.186	mg/kg	LHP-121	6 / 45	0.021 - 0.077	0.186	380	n	--	No	BSL
VOC	1330-20-7	Xylenes, Mixed		0.0018	J	0.62	mg/kg	LHP-128	28 / 235	0.00088 - 0.64	0.62	63	n	410	No	BSL

**Notes:**

(1) Minimum/maximum detected concentration.

(2) Maximum detected concentration used as the screening concentration.

(3) Screening values are USEPA Regional Screening Levels (RSLs) for residential soil (updated November 2010) based on the following endpoints:

c cancer endpoint and a target cancer risk of  $1 \times 10^{-6}$ 

n non-cancer endpoint and a target hazard quotient of 0.1

++ based on USEPA's Integrated Exposure Uptake Biokinetic (IEUBK) model.

(4) Alternate screening values are New Jersey Residential Direct Contact Soil Cleanup Criteria (NJRDCSCC), which are available on-line at <http://www.nj.gov/dep/srp/guidance/scc/>.

(5) Rationale Codes for selection or exclusion as COPC:

*Selection:*

ASL Above screening criteria

ASL2 Above NJRDCSCC in absence of screening criteria

NSC No Screening Criteria

*Exclusion:*

BSL Below screening criteria

BSL2 Below NJRDCSCC in absence of screening criteria

NUT Essential nutrient

(6) The following surrogate values were used for screening:

- total chromium uses chromium III as a surrogate (see Section 3.2 of the risk assessment)
- total mercury uses elemental mercury as a surrogate (see Section 3.2 of the risk assessment)
- alpha-chlordane and gamma-chlordane use chlordane as a surrogate
- delta-BHC uses alpha-BHC as a surrogate
- endosulfan II and endosulfan sulfate use endosulfan as a surrogate
- endrin ketone uses endrin as a surrogate
- acenaphthylene uses acenaphthene as a surrogate
- benzo(g,h,i)perylene and phenanthrene use pyrene as a surrogate
- methylcyclohexane uses cyclohexane as a surrogate
- m,p-xylene (sum of isomers) uses the more stringent of m- and p-xylene as a surrogate

(7) Aroclor results were summed and evaluated as Total PCBs using USEPA's "High Risk and Persistence" cancer potency estimates (see Section 3.2 of the risk assessment).

(8) PCDD or PCDF concentrations were converted to 2,3,7,8-TCDD equivalent concentrations using the WHO 2005 TEF multiplier (see Section 3.2 of the risk assessment).

(9) Carcinogenic PAH concentrations were converted to benzo(a)pyrene equivalent concentrations using USEPA default TEF multipliers (see Section 3.2 of the risk assessment).

(10) Screening value for carbazole obtained from the 2004 USEPA Region 9 Preliminary Remediation Goal (PRG) Tables.

Shading indicates a COPC

**Definitions:**

PCB = Polychlorinated biphenyl

PEST = Pesticide

SVOC = Semivolatile organic compound

VOC = Volatile organic compound

J = Estimated value

ft bgs = Feet below ground surface

mg/kg = Milligrams per kilogram

COPC = Chemical of potential concern

**TABLE 2.2**  
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN**  
**SUBSURFACE SOIL (2 to 10 ft bgs)**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Class	CAS No.	Constituent	Minimum Concentration <sup>(1)</sup> (Qualifier)	Maximum Concentration <sup>(1)</sup> (Qualifier)	Units	Location of Maximum	Frequency of Detection	Range of Detection Limits	Screening Concentration <sup>(2)</sup>	Screening Value (Basis) <sup>(3)</sup>	Alternate Screening Values <sup>(4)</sup>	COPC	Rationale <sup>(5)</sup>				
Metal	7429-90-5	Aluminum	452	J	27,700	mg/kg	TLS-4	75 / 75	n/a	27,700	7,700	n	--	Yes	ASL		
Metal	7440-36-0	Antimony	1.5	J	318	J	mg/kg	LHP-104	18 / 83	0.53 - 3.2	318	3.1	n	14	Yes	ASL	
Metal	7440-38-2	Arsenic	1.4		775	J	mg/kg	LHP-104	81 / 83	1.2 - 7.8	775	0.39	c	20	Yes	ASL	
Metal	7440-39-3	Barium	32.9	J	7,990	mg/kg	DC-B12	80 / 81	26 - 26	7,990	1,500	n	700	Yes	ASL		
Metal	7440-41-7	Beryllium	0.59		22.3	J	mg/kg	LHP-126	30 / 83	0.011 - 15	22.3	16	n	2	Yes	ASL	
Metal	7440-43-9	Cadmium	0.63		22	mg/kg	230-B1	23 / 83	0.056 - 15	22	7	n	39	Yes	ASL		
Metal	7440-70-2	Calcium	563		78,300	mg/kg	ESR-1	78 / 81	600 - 650	78,300	NSC		--	No	NUT		
Metal	7440-47-3	Chromium	(6)	6.35	7,250	mg/kg	231-B8	83 / 83	n/a	7,250	12,000	n	120,000	No	BSL		
Metal	18540-29-9	Chromium, Hexavalent	1.1		1.6	mg/kg	LHP-126	2 / 6	0.26 - 1.4	1.6	0.29	c	240	Yes	ASL		
Metal	7440-48-4	Cobalt	6.4		602	mg/kg	LHP-104	61 / 83	5.4 - 9.0	602	2.3	n	--	Yes	ASL		
Metal	7440-50-8	Copper	5.6	J	7,300	mg/kg	LHP-104	79 / 79	n/a	7,300	310	n	600	Yes	ASL		
Metal	7439-89-6	Iron	3,380		299,000	J	mg/kg	231-B6	83 / 83	n/a	299,000	5,500	n	--	Yes	ASL	
Metal	7439-92-1	Lead	4.8		11,300	mg/kg	LHP-104	83 / 83	n/a	11,300	400	++	400	Yes	ASL		
Metal	7439-95-4	Magnesium	822	J	10,500	J	mg/kg	5K-B5	76 / 83	550 - 900	10,500	NSC		--	No	NUT	
Metal	7439-96-5	Manganese	13.5		2,050	mg/kg	HB-8A	82 / 82	n/a	2,050	180	n	--	Yes	ASL		
Metal	7439-97-6	Mercury	(6)	0.063	832	J	mg/kg	IB-3	76 / 77	0.036 - 0.036	832	0.56	n	14	Yes	ASL	
Metal	22967-92-6	Methyl Mercury	0.000277		0.0697	mg/kg	MW-11D	3 / 3	n/a	0.0697	0.78	n	--	No	BSL		
Metal	7440-02-0	Nickel	5		638	J	mg/kg	LHP-104	79 / 83	4.5 - 5.2	638	150	n	250	Yes	ASL	
Metal	7440-09-7	Potassium	663	J	5,000	J	mg/kg	DC-B12	62 / 80	540 - 900	5,000	NSC		--	No	NUT	
Metal	7782-49-2	Selenium	1.1		16.2	mg/kg	LHP-127	18 / 83	0.66 - 58	16.2	39	n	63	No	BSL		
Metal	7440-22-4	Silver	2.2		3.9	mg/kg	231-B6	8 / 83	0.078 - 1.8	3.9	39	n	110	Yes	BSL/ASL*		
Metal	7440-23-5	Sodium	628		26,700	mg/kg	HB-1A	52 / 80	49 - 29,000	26,700	NSC		--	No	NUT		
Metal	7440-28-0	Thallium	27	J	27	J	mg/kg	LHP-126	1 / 83	0.35 - 31	27	NSC		2.0	No	IFD	
Metal	7440-62-2	Vanadium	9.7		71.4	mg/kg	LHP-107	79 / 83	6.0 - 150	71.4	0.55	n	370	Yes	ASL		
Metal	7440-66-6	Zinc	12.1		51,800	mg/kg	LHP-126	71 / 71	n/a	51,800	2,300	n	1,500	Yes	ASL		
Inorganic	57-12-5	Cyanide	0.38	J	0.38	J	mg/kg	MW-26S	1 / 81	0.013 - 1.8	0.38	160	n	1,100	No	BSL	
PCB	NA	Total PCBs	(7)	0.0122	43.2	mg/kg	231-B6	83 / 83	n/a	43.2	0.24	c	0.49	Yes	ASL		
PEST	5103-71-9	Alpha-Chlordane	(6)	0.0553	J	0.0553	J	mg/kg	CF-7	1 / 83	0.00025 - 0.016	0.0553	1.6	c	--	No	BSL
PEST	319-85-7	Beta-BHC	0.0616	J	0.0616	J	mg/kg	IB-3	1 / 83	0.00020 - 0.016	0.0616	0.27	c	--	No	BSL	
PEST	58-89-9	Bhc, Gamma Isomer	0.0054		0.0054	mg/kg	IB-3	1 / 83	0.00019 - 0.016	0.0054	0.52	c	0.52	No	BSL		
PEST	72-54-8	P,P-DDD	0.0042		0.032	mg/kg	TLN-3	13 / 83	0.00023 - 0.016	0.032	2	c	3	No	BSL		
PEST	72-55-9	P,P'-DDE	0.0016		0.0703	mg/kg	231-B8	18 / 83	0.00023 - 0.012	0.0703	1.4	c	2	No	BSL		
PEST	50-29-3	P,P-DDT	0.0065		0.278	mg/kg	ADS-2	13 / 83	0.00023 - 0.016	0.278	1.7	c	2	No	BSL		
PEST	60-57-1	Dieldrin	0.0183	J	0.0183	J	mg/kg	IB-3	1 / 83	0.00024 - 0.016	0.0183	0.03	c	0.042	No	BSL	
PEST	33213-65-9	Endosulfan II	(6)	0.006	0.006	mg/kg	TLN-3	1 / 83	0.00025 - 0.016	0.006	37	n	340	No	BSL		
PEST	72-20-8	Endrin	0.0079		0.0079	mg/kg	IB-3	1 / 83	0.00023 - 0.016	0.0079	1.8	n	17	No	BSL		
PEST	5103-74-2	Gamma-Chlordane	(6)	0.0582	J	0.0582	J	mg/kg	CF-7	1 / 83	0.00025 - 0.016	0.0582	1.6	c	--	No	BSL
Dioxin	NA	Dioxin 2,3,7,8-TCDD TEQ	(8)	4.93E-06	1.54E-05	mg/kg	HB-1A	5 / 5	n/a	1.54E-05	4.50E-06	c	--	Yes	ASL		
Furan	NA	Furan 2,3,7,8-TCDD TEQ	(8)	1.41E-06	5.43E-05	mg/kg	HB-1A	5 / 5	n/a	5.43E-05	4.50E-06	c	--	Yes	ASL		
SVOC	NA	Benzo(a)pyrene TEQ	(9)	0.0191	42.7	mg/kg	TLS-6	83 / 83	n/a	42.7	0.015	c	0.66	Yes	ASL		
SVOC	83-32-9	Acenaphthene		3.2E-02	J	166	mg/kg	SILO-B1	32 / 83	0.018 - 8.9	166	340	n	3,400	No	BSL	
SVOC	208-96-8	Acenaphthylene	(6)	0.0337	J	0.193	mg/kg	LHP-102	6 / 83	0.014 - 8.9	0.105	340	n	--	No	BSL	
SVOC	120-12-7	Anthracene		0.0108	J	52.4	mg/kg	SILO-B1	43 / 83	0.014 - 8.9	52.4	1,700	n	10,000	No	BSL	
SVOC	191-24-2	Benzo(g,h,i)perylene	(6)	0.0138	J	0.885	mg/kg	SILO-B1	34 / 83	0.019 - 8.9	0.885	170	n	--	No	BSL	
SVOC	92-52-4	Biphenyl, 1,1'		0.0231	J	0.425	mg/kg	MW-26S	3 / 14	0.017 - 0.063	0.425	390	n	--	No	BSL	
SVOC	117-81-7	Bis(2-Ethylhexyl) Phthalate		0.04	J	3.3	mg/kg	231-B6	44 / 83	0.0295 - 8.9	3.3	35	c	49	Yes	BSL/ASL*	
SVOC	85-68-7	Butyl Benzyl Phthalate		0.061	J	0.638	mg/kg	231-B6	2 / 83	0.0175 - 8.9	0.638	260	c	1,100	No	BSL	

**TABLE 2.2**  
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN**  
**SUBSURFACE SOIL (2 to 10 ft bgs)**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Class	CAS No.	Constituent	Minimum Concentration <sup>(1)</sup> (Qualifier)	Maximum Concentration <sup>(1)</sup> (Qualifier)	Units	Location of Maximum	Frequency of Detection	Range of Detection Limits	Screening Concentration <sup>(2)</sup>	Screening Value (Basis) <sup>(3)</sup>	Alternate Screening Values <sup>(4)</sup>	COPC	Rationale <sup>(5)</sup>			
SVOC	86-74-8	Carbazole	0.0249	J	22.9	mg/kg	SILO-B1	26 / 83	0.0095 - 8.9	22.9	24	c	--	No	BSL	
SVOC	106-47-8	Chloroaniline, P-	0.0385	J	3.31	mg/kg	5K-B5	10 / 83	0.022 - 22	3.31	2.4	c	230	Yes	ASL	
SVOC	91-58-7	Chloronaphthalene, 2-	0.0222	J	19.2	mg/kg	IB-3	18 / 83	0.0325 - 8.9	19.2	630	n	--	No	BSL	
SVOC	MEPHI314	Cresols, M & P	0.0334	J	1.15	mg/kg	HB-3A	8 / 83	0.033 - 22	1.15	340	n	2,800	No	BSL	
SVOC	132-64-9	Dibenzofuran	0.0197	J	156	mg/kg	SILO-B1	35 / 83	0.016 - 8.9	156	7.8	n	--	Yes	ASL	
SVOC	95-50-1	Dichlorobenzene, 1,2-	0.0263	J	775	J	231-B8	33 / 83	0.025 - 8.9	775	190	n	5,100	Yes	ASL	
SVOC	541-73-1	Dichlorobenzene, 1,3-	0.0346	J	63	mg/kg	231-B8	16 / 83	0.026 - 8.9	63	NSC		5,100	No	BSL2	
SVOC	106-46-7	Dichlorobenzene, 1,4-	0.0279	J	158	mg/kg	231-B8	21 / 83	0.025 - 8.9	158	2.4	c	570	Yes	ASL	
SVOC	120-83-2	Dichlorophenol, 2,4-	0.517		0.517	mg/kg	HB-8C	1 / 83	0.0385 - 22	0.517	18	n	170	No	BSL	
SVOC	131-11-3	Dimethyl Phthalate	0.581		0.581	mg/kg	231-B6	1 / 83	0.01 - 8.9	0.581	NSC		10,000	No	BSL2	
SVOC	105-67-9	Dimethylphenol, 2,4-	0.0705	J	0.135	J	HB-1A	3 / 83	0.06 - 22	0.135	120	n	1,100	No	BSL	
SVOC	84-74-2	Di-N-Butyl Phthalate	0.105		0.125	mg/kg	231-B6	2 / 83	0.0145 - 8.9	0.125	610	n	5,700	No	BSL	
SVOC	121-14-2	Dinitrotoluene, 2,4-	256		256	mg/kg	230-B1	1 / 83	0.027 - 8.9	256	1.6	c	1.0	No	IFD	
SVOC	606-20-2	Dinitrotoluene, 2,6-	196		196	mg/kg	230-B1	1 / 83	0.0265 - 8.9	196	6.1	n	1.0	No	IFD	
SVOC	117-84-0	Di-N-Octyl Phthalate	0.0474	J	0.0474	J	mg/kg	LB-103	1 / 83	0.02 - 8.9	0.0474	NSC		1,100	No	BSL2
SVOC	206-44-0	Fluoranthene	0.0171	J	136	mg/kg	SILO-B1	65 / 83	0.014 - 8.9	136	230	n	2,300	No	BSL	
SVOC	86-73-7	Fluorene	0.0299	J	145	mg/kg	SILO-B1	31 / 83	0.014 - 8.9	145	230	n	2,300	No	BSL	
SVOC	118-74-1	Hexachlorobenzene	0.0474	J	6.69	mg/kg	231-B6	19 / 83	0.0135 - 8.9	6.69	0.3	c	0.66	Yes	ASL	
SVOC	87-68-3	Hexachlorobutadiene	0.0732		233	mg/kg	231-B8	5 / 83	0.0155 - 8.9	233	6.2	c	1	Yes	ASL	
SVOC	67-72-1	Hexachloroethane	0.0833	J	1.95	mg/kg	ADS-8	2 / 83	0.0115 - 22	1.95	35	c	6	No	BSL	
SVOC	91-57-6	Methylnaphthalene, 2-	2.0E-02	J	172	mg/kg	SILO-B1	40 / 83	0.024 - 8.9	172	31	n	--	Yes	ASL	
SVOC	95-48-7	Methylphenol, 2-	0.0432	J	0.113	J	mg/kg	HB-3D	3 / 83	0.0225 - 22	0.113	310	n	2,800	No	BSL
SVOC	91-20-3	Naphthalene	0.0209	J	158	mg/kg	SILO-B1	55 / 83	0.021 - 0.12	158	3.6	c	230	Yes	ASL	
SVOC	85-01-8	Phenanthrene <sup>(6)</sup>	0.0172	J	343	mg/kg	SILO-B1	59 / 83	0.018 - 8.9	343	170	n	--	Yes	ASL	
SVOC	108-95-2	Phenol	0.101	J	4.71	mg/kg	HB-1A	8 / 83	0.044 - 22	4.71	1,800	n	10,000	No	BSL	
SVOC	129-00-0	Pyrene	0.0161	J	106	mg/kg	SILO-B1	64 / 83	0.014 - 8.9	106	170	n	1,700	No	BSL	
SVOC	120-82-1	Trichlorobenzene, 1,2,4-	0.0188	J	4,640	J	mg/kg	231-B8	35 / 83	0.019 - 8.9	4,640	22	c	68	Yes	ASL
SVOC	95-95-4	Trichlorophenol, 2,4,5-	0.268		0.268	mg/kg	HB-8C	1 / 83	0.035 - 22	0.268	610	n	5,600	No	BSL	
VOC	67-64-1	Acetone	0.033		3.11	mg/kg	HF-B3	34 / 83	0.0049 - 12	3.11	6,100	n	1,000	No	BSL	
VOC	71-43-2	Benzene	0.0011		143	mg/kg	230-B1	47 / 83	0.00081 - 2.3	143	1.1	c	3	Yes	ASL	
VOC	78-93-3	Butanone, 2- (MEK)	0.0081	J	1.42	mg/kg	SPR-3	14 / 83	0.0040 - 12	1.42	2,800	n	1,000	No	BSL	
VOC	75-15-0	Carbon Disulfide	0.0018	J	5.4	mg/kg	231-B8	29 / 83	0.0044 - 12	5.4	82	n	--	No	BSL	
VOC	108-90-7	Chlorobenzene	0.0029	J	74.4	mg/kg	231-B8	25 / 83	0.0040 - 12	74.4	29	n	37	Yes	ASL	
VOC	67-66-3	Chloroform	0.0015	J	44.6	mg/kg	231-B8	20 / 83	0.0040 - 12	44.6	0.29	c	19	Yes	ASL	
VOC	74-87-3	Chloromethane	0.0034	J	0.0145	mg/kg	CF-1	2 / 83	0.0040 - 12	0.0145	12	n	520	No	BSL	
VOC	75-34-3	Dichloroethane, 1,1-	0.00081	J	0.0093	mg/kg	DSP-3	3 / 83	0.0040 - 12	0.0093	3.3	c	570	No	BSL	
VOC	107-06-2	Dichloroethane, 1,2-	0.0167		0.0167	mg/kg	CF-1	1 / 83	0.0040 - 12	0.0167	0.43	c	6.0	No	BSL	
VOC	156-59-2	Dichloroethene, cis-1,2-	0.0045	J	0.0461	mg/kg	HF-B1	2 / 83	0.0040 - 12	0.0461	16	n	79	No	BSL	
VOC	78-87-5	Dichloropropane, 1,2-	0.0199		0.0199	mg/kg	ADN-1	1 / 83	0.0040 - 12	0.0199	0.89	c	10	No	BSL	
VOC	100-41-4	Ethylbenzene	0.00078	J	13.3	mg/kg	SPR-4A	26 / 83	0.00081 - 2.3	13.3	5.4	c	1,000	Yes	ASL	
VOC	108-87-2	Methylcyclohexane	0.0978	J	0.284	J	mg/kg	LHP-102	4 / 14	0.036 - 0.075	0.284	700	n	--	No	BSL
VOC	75-09-2	Methylene Chloride	0.0046	J	690	mg/kg	231-B13	14 / 83	0.0044 - 1.6	690	11	c	49	Yes	ASL	
VOC	100-42-5	Styrene	0.0019	J	5.04	mg/kg	SPR-2A	4 / 83	0.0040 - 12	5.04	630	n	23	No	BSL	
VOC	127-18-4	Tetrachloroethylene (PCE)	0.0048	J	6.48	mg/kg	231-B8	3 / 83	0.0040 - 12	6.48	0.55	c	4	Yes	ASL	
VOC	108-88-3	Toluene	0.0014		1.57	mg/kg	230-B1	29 / 83	0.00081 - 2.3	1.57	500	n	1,000	No	BSL	
VOC	71-55-6	Trichloroethane, 1,1,1-	0.053	J	0.053	J	mg/kg	LB-103	1 / 83	0.0040 - 12	0.053	870	n	210	No	BSL
VOC	79-01-6	Trichloroethylene (TCE)	0.0028	J	139	mg/kg	230-B1	7 / 83	0.0040 - 12	139	2.8	c	23	Yes	ASL	

**TABLE 2.2**  
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN**  
**SUBSURFACE SOIL (2 to 10 ft bgs)**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Class	CAS No.	Constituent	Minimum Concentration <sup>(1)</sup> (Qualifier)	Maximum Concentration <sup>(1)</sup> (Qualifier)	Units	Location of Maximum	Frequency of Detection	Range of Detection Limits	Screening Concentration <sup>(2)</sup>	Screening Value (Basis) <sup>(3)</sup>	Alternate Screening Values <sup>(4)</sup>	COPC	Rationale <sup>(5)</sup>			
VOC	75-01-4	Vinyl Chloride	0.0031	J	0.0564	mg/kg	HF-B1	2 / 83	0.0040 - 12	0.0564	0.06	c	2	Yes	BSL/ASL*	
VOC	XYLMP	Xylene, M&P- (sum of isomers)	(6)	0.0607	J	0.568	mg/kg	LHP-101	6 / 14	0.048 - 0.080	0.568	340	n	--	No	BSL
VOC	95-47-6	Xylene, O-		0.0295	J	0.125	mg/kg	LHP-102	5 / 14	0.027 - 0.048	0.125	380	n	--	No	BSL
VOC	1330-20-7	Xylenes, Mixed		0.002		6.29	mg/kg	231-B8	25 / 83	0.00095 - 4.6	6.29	63	n	410	No	BSL

**Notes:**

(1) Minimum/maximum detected concentration.

(2) Maximum detected concentration used as the screening concentration.

(3) Screening values are USEPA Regional Screening Levels (RSLS) for residential soil (updated November 2010) based on the following endpoints:

c cancer endpoint and a target cancer risk of  $1 \times 10^{-6}$ 

n non-cancer endpoint and a target hazard quotient of 0.1

++ based on USEPA's Integrated Exposure Uptake Biokinetic (IEUBK) model.

(4) Alternate screening values are New Jersey Residential Direct Contact Soil Cleanup Criteria (NJRDCSCC), which are available on-line at <http://www.nj.gov/dep/srp/guidance/scc/>.

(5) Rationale Codes for selection or exclusion as COPC:

Selection:

ASL Above screening criteria

ASL2 Above NJRDCSCC in absence of screening criteria

NSC No Screening Criteria

ASL\* Constituent identified as surface soil (0 to 2 ft bgs) and, therefore, retained as mixed soil (0 to 10 ft bgs) COPC

Exclusion:

Below screening criteria

Below NJRDCSCC in absence of screening criteria

Essential nutrient

Infrequent detection (&lt;5%)

(6) The following surrogate values were used for screening:

- total chromium uses chromium III as a surrogate (see Section 3.2 of the risk assessment)
- total mercury uses elemental mercury as a surrogate (see Section 3.2 of the risk assessment)
- alpha-chlordane and gamma-chlordane use chlordane as a surrogate
- delta-BHC uses alpha-BHC as a surrogate
- endosulfan II and endosulfan sulfate use endosulfan as a surrogate
- endrin ketone uses endrin as a surrogate
- acenaphthylene uses acenaphthene as a surrogate
- benzo(g,h,i)perylene and phenanthrene use pyrene as a surrogate
- methylcyclohexane uses cyclohexane as a surrogate
- m,p-xylene (sum of isomers) uses the more stringent of m- and p-xylene as a surrogate

(7) Aroclor results were summed and evaluated as Total PCBs using USEPA's "High Risk and Persistence" cancer potency estimates (see Section 3.2 of the risk assessment).

(8) PCDD or PCDF concentrations were converted to 2,3,7,8-TCDD equivalent concentrations using the WHO 2005 TEF multiplier (see Section 3.2 of the risk assessment).

(9) Carcinogenic PAH concentrations were converted to benzo(a)pyrene equivalent concentrations using USEPA default TEF multipliers (see Section 3.2 of the risk assessment).

Shading indicates a COPC

**Definitions:**

PCB = Polychlorinated biphenyl

PEST = Pesticide

SVOC = Semivolatile organic compound

VOC = Volatile organic compound

J = Estimated value

ft bgs = Feet below ground surface

mg/kg = Milligrams per kilogram

COPC = Chemical of potential concern

**Table 2.3**  
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN**  
**OVERBURDEN GROUNDWATER**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Class	CAS No.	Constituent	Minimum Concentration <sup>(1)</sup> (Qualifier)	Maximum Concentration <sup>(1)</sup> (Qualifier)	Units	Location of Maximum	Frequency of Detection	Range of Detection Limits	Screening Concentration <sup>(2)</sup>	Screening Value (Basis) <sup>(3)</sup>	Alternate Screening Values <sup>(4)</sup>	COPC	Rationale <sup>(5)</sup>		
<b>Dissolved (Filtered) Results</b>															
Metal	7429-90-5	Aluminum	201	218	µg/L	MW-24S	2 / 20	200 - 2,000	218	3,700	n	200	No	BSL	
Metal	7440-38-2	Arsenic	11.7	588	J	µg/L	MW-12S	14 / 20	8.0 - 80	588	0.045	c	0.02	Yes	ASL
Metal	7440-39-3	Barium	390	J	15,300	µg/L	MW-21S	5 / 20	200 - 2,000	15,300	730	n	6,000	Yes	ASL
Metal	7440-43-9	Cadmium	10.5	10.5	µg/L	MW-15S	1 / 20	4.0 - 40	10.5	1.8	n	4	Yes	ASL	
Metal	7440-70-2	Calcium	5,950	1,940,000	µg/L	MW-8S	19 / 20	5,000 - 5,000	1,940,000	NSC	--	--	No	NUT	
Metal	7440-47-3	Chromium <sup>(6)</sup>	11.8	211	J	µg/L	MW-18S	5 / 20	10 - 100	211	5,500	n	70	No	BSL
Metal	7440-48-4	Cobalt	191	191	µg/L	MW-15S	1 / 20	50 - 500	191	1.1	n	--	Yes	ASL	
Metal	7439-89-6	Iron	124	289,000	µg/L	MW-15S	18 / 20	100 - 100	289,000	2,600	n	300	Yes	ASL	
Metal	7439-92-1	Lead	4.5	J	4.5	µg/L	MW-21S	1 / 20	3.0 - 30	4.5	15	MCL	5	No	BSL
Metal	7439-95-4	Magnesium	7,320	333,000	µg/L	MW-15S	18 / 20	5,000 - 5,000	333,000	NSC	--	--	No	NUT	
Metal	7439-96-5	Manganese	27.3	201,000	µg/L	MW-15S	18 / 20	15 - 15	201,000	88	n	50	Yes	ASL	
Metal	7439-97-6	Mercury	0.25	J	164	µg/L	MW-24S	8 / 20	0.20 - 0.20	164	0.057	n	2	Yes	ASL
Metal	7440-02-0	Nickel	62.8	190	µg/L	MW-26S	3 / 20	40 - 400	190	73	n	100	Yes	ASL	
Metal	7440-09-7	Potassium	5,240	J	795,000	µg/L	MW-12S	19 / 20	5,000 - 5,000	795,000	NSC	--	--	No	NUT
Metal	7440-23-5	Sodium	20,700	29,600,000	J	µg/L	MW-8S	20 / 20	n/a	29,600,000	NSC	50,000	No	NUT	
Metal	7440-62-2	Vanadium	57.9	120	J	µg/L	MW-18S	2 / 20	50 - 500	120	0.26	n	60	Yes	ASL
Metal	7440-66-6	Zinc	42.8	358	µg/L	MW-10S	4 / 20	20 - 200	358	1,100	n	2,000	No	BSL	
<b>Total (Unfiltered) Results</b>															
ING	57-12-5	Cyanide	20	77	µg/L	MW-12S	3 / 19	10 - 10	77	73	n	100	Yes	ASL	
Metal	7429-90-5	Aluminum	202	2,360	µg/L	MW-14S	7 / 20	200 - 2,000	2,360	3,700	n	200	No	BSL	
Metal	7440-36-0	Antimony	6	J	6	µg/L	MW-11S	1 / 20	6.0 - 60	6	1.5	n	6.0	Yes	ASL
Metal	7440-38-2	Arsenic	12	275	J	µg/L	MW-18S	14 / 20	8.0 - 80	275	0.045	c	0.02	Yes	ASL
Metal	7440-39-3	Barium	319	J	14,200	µg/L	MW-21S	5 / 20	200 - 2,000	14,200	730	n	6,000	Yes	ASL
Metal	7440-43-9	Cadmium	5.9	22.9	µg/L	MW-7S	3 / 20	4.0 - 40	22.9	1.8	n	4.0	Yes	ASL	
Metal	7440-70-2	Calcium	5,550	1,810,000	µg/L	MW-8S	19 / 20	5,000 - 5,000	1,810,000	NSC	--	--	No	NUT	
Metal	7440-47-3	Chromium <sup>(6)</sup>	11.1	233	J	µg/L	MW-18S	6 / 20	10 - 100	233	5,500	n	70	No	BSL
Metal	7440-48-4	Cobalt	190	190	µg/L	MW-15S	1 / 20	50 - 500	190	1.1	n	--	Yes	ASL	
Metal	7440-50-8	Copper	40.3	40.3	µg/L	MW-23S	1 / 20	25 - 250	40.3	150	n	1,300	No	BSL	
Metal	7439-89-6	Iron	103	346,000	µg/L	MW-15S	20 / 20	n/a	346,000	2,600	n	300	Yes	ASL	
Metal	7439-92-1	Lead	3.1	9.7	µg/L	MW-23S	4 / 20	3.0 - 30	9.7	15	MCL	5.0	No	BSL	
Metal	7439-95-4	Magnesium	6,470	J	320,000	µg/L	MW-15S	18 / 20	5,000 - 5,000	320,000	NSC	--	--	No	NUT
Metal	7439-96-5	Manganese	27.6	219,000	µg/L	MW-15S	18 / 20	15 - 15	219,000	88	n	50	Yes	ASL	
Metal	7439-97-6	Mercury	0.2	233	µg/L	MW-24S	13 / 20	0.20 - 0.20	233	0.057	n	2.0	Yes	ASL	
Metal	22967-92-6	Methyl Mercury	0.000635	168	µg/L	MW-24S	3 / 3	n/a	168	0.37	n	--	Yes	ASL	
Metal	7440-02-0	Nickel	56.6	63.1	µg/L	MW-12S	2 / 20	40 - 400	63.1	73	n	100	No	BSL	
Metal	7440-09-7	Potassium	5,060	J	821,000	µg/L	MW-12S	18 / 20	5,000 - 50,000	821,000	NSC	--	--	No	NUT
Metal	7782-49-2	Selenium	10.7	10.7	µg/L	MW-26S	1 / 20	10 - 100	10.7	18	n	40	No	BSL	
Metal	7440-23-5	Sodium	23,400	28,600,000	J	µg/L	MW-8S	19 / 19	n/a	28,600,000	NSC	50,000	No	NUT	
Metal	7440-62-2	Vanadium	54.6	136	J	µg/L	MW-18S	2 / 20	50 - 500	136	0.26	n	60	Yes	ASL
Metal	7440-66-6	Zinc	44.1	J	1,690	µg/L	MW-7S	7 / 20	20 - 20	1,690	1,100	n	2,000	Yes	ASL
PEST	72-54-8	P,P'-DDD	0.035	J	0.035	µg/L	MW-17S	1 / 19	0.0024 - 0.0030	0.035	0.28	c	0.10	No	BSL
Dioxin	NA	Dioxin 2,3,7,8-TCDD TEQ <sup>(7)</sup>	1.90E-05	1.90E-05	µg/L	MW-24S	1 / 1	n/a	1.90E-05	5.20E-07	c	2.00E-07	Yes	ASL	
Furan	NA	Furan 2,3,7,8-TCDD TEQ <sup>(7)</sup>	1.62E-04	1.62E-04	µg/L	MW-24S	1 / 1	n/a	1.62E-04	5.20E-07	c	2.00E-07	Yes	ASL	
SVOC	83-32-9	Acenaphthene	0.311	52.8	µg/L	MW-13S	9 / 19	0.017 - 0.019	52.8	220	n	400	No	BSL	
SVOC	208-96-8	Acenaphthylene	0.737	0.737	µg/L	MW-13S	1 / 19	0.0095 - 0.012	0.737	220	n	--	No	BSL	
SVOC	120-12-7	Anthracene	0.304	13.5	µg/L	MW-18S	10 / 19	0.021 - 0.023	13.5	1,100	n	2,000	No	BSL	
SVOC	56-55-3	Benz(a)anthracene	0.266	0.775	µg/L	MW-12S	3 / 19	0.0068 - 0.0076	0.775	0.029	c	0.05	Yes	ASL	
SVOC	92-52-4	Biphenyl, 1,1-	0.82	J	43.5	µg/L	MW-24S	5 / 19	0.33 - 0.37	43.5	180	n	400	No	BSL
SVOC	117-81-7	Bis(2-Ethylhexyl) Phthalate	1.1	J	1.4	µg/L	MW-24S	2 / 19	0.66 - 0.83	1.4	4.8	c	2.0	No	BSL
SVOC	86-74-8	Carbazole	1.4	J	143	µg/L	MW-24S	6 / 19	0.36 - 0.41	143	24	c	--	Yes	ASL
SVOC	106-47-8	Chloroaniline, p-	1.6	J	4,460	µg/L	MW-17S	9 / 19	0.40 - 0.45	4,460	0.34	c	30	Yes	ASL
SVOC	91-58-7	Chloronaphthalene, 2-	7.9	44.6	µg/L	MW-18S	2 / 19	0.98 - 1.2	44.6	290	n	600	No	BSL	
SVOC	95-57-8	Chlorophenol, 2-	2.7	J	26.1	µg/L	MW-6S	5 / 19	0.95 - 1.1	26.1	18	n	40	Yes	ASL

**Table 2.3**  
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN**  
**OVERBURDEN GROUNDWATER**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Class	CAS No.	Constituent	Minimum Concentration <sup>(1)</sup> (Qualifier)	Maximum Concentration <sup>(1)</sup> (Qualifier)	Units	Location of Maximum	Frequency of Detection	Range of Detection Limits	Screening Concentration <sup>(2)</sup>	Screening Value (Basis) <sup>(3)</sup>	Alternate Screening Values <sup>(4)</sup>	COPC	Rationale <sup>(5)</sup>		
SVOC	218-01-9	Chrysene	0.213	J	0.469	µg/L	MW-12S	2 / 19	0.017 - 0.019	0.469	2.9	c	5.0	No BSL	
SVOC	132-64-9	Dibenzofuran	2.4	J	16.2	µg/L	MW-13S	4 / 19	0.34 - 0.39	16.2	3.7	n	--	Yes ASL	
SVOC	95-50-1	Dichlorobenzene, 1,2-	0.49	J	4,220	µg/L	MW-24S	11 / 19	0.20 - 0.51	4,220	37	n	600	Yes ASL	
SVOC	541-73-1	Dichlorobenzene, 1,3-	(6)	2.5	199	µg/L	MW-21S	8 / 19	0.32 - 0.79	199	37	n	600	Yes ASL	
SVOC	106-46-7	Dichlorobenzene, 1,4-		0.8	J	582	µg/L	MW-24S	9 / 19	0.24 - 0.60	582	0.43	c	75	Yes ASL
SVOC	120-83-2	Dichlorophenol, 2,4-		5.5	11.7	µg/L	MW-21S	4 / 19	1.6 - 1.8	11.7	11	n	20	Yes ASL	
SVOC	105-67-9	Dimethylphenol, 2,4-		3.2	J	9.6	µg/L	MW-17S	3 / 19	1.6 - 1.8	9.6	73	n	100	No BSL
SVOC	206-44-0	Fluoranthene	0.229		11.1	µg/L	MW-12S	8 / 19	0.0090 - 0.0098	11.1	150	n	300	No BSL	
SVOC	86-73-7	Fluorene	0.274		8.21	µg/L	MW-17S	7 / 19	0.020 - 0.023	8.21	150	n	300	No BSL	
SVOC	118-74-1	Hexachlorobenzene	1		1	µg/L	MW-24S	1 / 19	0.020 - 0.066	1	0.042	c	0.02	Yes ASL	
SVOC	91-57-6	Methylnaphthalene, 2-	0.91	J	0.91	µg/L	MW-21S	1 / 19	0.41 - 0.51	0.91	15	n	--	No BSL	
SVOC	95-48-7	Methylphenol, 2-	2.5	J	5.1	µg/L	MW-17S	2 / 19	1.4 - 1.5	5.1	180	n	--	No BSL	
SVOC	91-20-3	Naphthalene	1.18		561	µg/L	MW-24S	8 / 19	0.026 - 0.029	561	0.14	c	300	Yes ASL	
SVOC	98-95-3	Nitrobenzene	55	J	55	µg/L	MW-17S	1 / 19	0.42 - 0.52	55	0.12	c	4.0	Yes ASL	
SVOC	87-86-5	Pentachlorophenol	1.87		1.87	µg/L	MW-24S	1 / 19	0.30 - 0.43	1.87	0.17	c	0.30	Yes ASL	
SVOC	85-01-8	Phenanthrene	(6)	0.422	27	µg/L	MW-12S	7 / 19	0.021 - 0.024	27	110	n	--	No BSL	
SVOC	108-95-2	Phenol		1.1	J	1.1	µg/L	MW-6S	1 / 19	0.50 - 0.62	1.1	1,100	n	2,000	No BSL
SVOC	129-00-0	Pyrene		0.211	J	4.5	µg/L	MW-12S	7 / 19	0.014 - 0.015	4.5	110	n	200	No BSL
SVOC	120-82-1	Trichlorobenzene, 1,2,4-		0.66	J	285	µg/L	MW-24S	5 / 19	0.16 - 4.0	285	2.3	c	9.0	Yes ASL
SVOC	95-95-4	Trichlorophenol, 2,4,5-		8.6	J	8.6	µg/L	MW-17S	1 / 19	1.9 - 2.4	8.6	370	n	700	No BSL
SVOC	88-06-2	Trichlorophenol, 2,4,6-		2.2	J	2.2	µg/L	MW-17S	1 / 19	1.3 - 1.6	2.2	6.1	c	1.0	No BSL
VOC	67-64-1	Acetone	22.2		22.2	µg/L	MW-17S	1 / 19	2.4 - 61	22.2	2,200	n	6,000	No BSL	
VOC	71-43-2	Benzene	0.51	J	848	µg/L	MW-21S	14 / 19	0.21 - 0.21	848	0.41	c	0.20	Yes ASL	
VOC	75-15-0	Carbon Disulfide	1.4	J	2.6	µg/L	MW-12S	2 / 19	0.21 - 5.2	2.6	100	n	700	No BSL	
VOC	108-90-7	Chlorobenzene	1.4		16,200	µg/L	MW-6S	11 / 19	0.22 - 0.56	16,200	9.1	n	50	Yes ASL	
VOC	67-66-3	Chloroform	0.92	J	3.5	µg/L	MW-17S	2 / 19	0.22 - 5.4	3.5	0.19	c	70	Yes ASL	
VOC	156-59-2	Cis-1,2-Dichloroethene	0.34	J	3	µg/L	MW-13S	5 / 19	0.18 - 4.5	3	7.3	n	70	No BSL	
VOC	75-34-3	Dichloroethane, 1,1-	0.38	J	2.6	µg/L	MW-23S	2 / 19	0.23 - 5.8	2.6	2.4	c	50	Yes ASL	
VOC	107-06-2	Dichloroethane, 1,2-	1.8		1.8	µg/L	MW-8S	1 / 19	0.29 - 7.3	1.8	0.15	c	0.30	Yes ASL	
VOC	100-41-4	Ethylbenzene	0.9	J	30.4	µg/L	MW-16S	7 / 19	0.20 - 1.0	30.4	1.5	c	700	Yes ASL	
VOC	98-82-8	Isopropylbenzene	0.42	J	1.9	µg/L	MW-13S	2 / 19	0.20 - 5.0	1.9	68	n	--	No BSL	
VOC	108-10-1	4-Methyl-2-Pantanone (MIBK)	2.9	J	2.9	µg/L	MW-17S	1 / 19	1.1 - 27	2.9	200	n	--	No BSL	
VOC	108-87-2	Methylcyclohexane	(6)	0.97	J	0.97	µg/L	MW-17S	1 / 19	0.18 - 4.6	0.97	1,300	n	--	No BSL
VOC	75-09-2	Methylene Chloride		0.57	J	1,960	µg/L	MW-24S	3 / 19	0.27 - 6.6	1,960	4.8	c	3.0	Yes ASL
VOC	100-42-5	Styrene	4	J	4	µg/L	MW-16S	1 / 19	0.16 - 4.0	4	160	n	100	No BSL	
VOC	1634-04-4	Tert-Butyl Methyl Ether	0.45	J	10.5	µg/L	MW-6S	4 / 19	0.31 - 7.6	10.5	12	c	70	No BSL	
VOC	127-18-4	Tetrachloroethylene (PCE)	6.9	J	6.9	µg/L	MW-24S	1 / 19	0.28 - 6.9	6.9	0.11	c	0.40	Yes ASL	
VOC	108-88-3	Toluene	0.82	J	137	µg/L	MW-17S	6 / 19	0.20 - 1.0	137	230	n	600	No BSL	
VOC	156-60-5	Trans-1,2-Dichloroethene	0.85	J	0.85	µg/L	MW-13S	1 / 19	0.42 - 11	0.85	11	n	100	No BSL	
VOC	79-01-6	Trichloroethylene (TCE)	0.41	J	0.52	µg/L	MW-11S	3 / 19	0.29 - 7.2	0.52	2	c	1.0	No BSL	
VOC	75-01-4	Vinyl Chloride	0.65	J	0.71	µg/L	MW-13S	2 / 19	0.29 - 7.2	0.71	0.016	c	0.08	Yes ASL	
VOC	XYLMP	Xylene, M,P-(sum of isomers)	2.2	J	114	µg/L	MW-24S	7 / 19	0.42 - 1.0	114	120	n	--	No BSL	
VOC	95-47-6	Xylene, O-	0.82	J	14.4	µg/L	MW-24S	6 / 19	0.31 - 7.6	14.4	120	n	--	No BSL	
VOC	1330-20-7	Xylenes, Mixed	0.82	J	128	µg/L	MW-24S	8 / 19	0.31 - 0.76	128	20	n	1,000	Yes ASL	

**Notes:**

- (1) Minimum/maximum detected concentration.  
(2) Maximum detected concentration used as the screening concentration.  
(3) Screening values are USEPA Regional Screening Levels (RSLs) for tapwater (updated November 2010) or, if an RSL was not available, the Federal Maximum Contaminant Level (MCL). The groundwater screening values are based on the following endpoints:  
 c Cancer endpoint and a target cancer risk of  $1 \times 10^{-6}$   
 nc Non-cancer endpoint and a target hazard quotient of 0.1  
 MCL Federal MCL

(4) Alternate screening values are New Jersey Class II-A Groundwater Quality Criteria (GQC), which are available on-line at [http://www.nj.gov/dep/wms/bwqsa/Appendix\\_Table\\_1.htm](http://www.nj.gov/dep/wms/bwqsa/Appendix_Table_1.htm).

(5) Rationale Codes for selection or exclusion as COPC:

**Definitions:**

- PCB = Polychlorinated biphenyl  
PEST = Pesticide  
SVOC = Semivolatile organic compound  
VOC = Volatile organic compound  
J = Estimated value  
µg/L Micrograms per liter  
COPC Chemical of potential concern  
MCL Maximum contaminant level

**Table 2.3**  
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN**  
**OVERBURDEN GROUNDWATER**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Class	CAS No.	Constituent	Minimum Concentration <sup>(1)</sup> (Qualifier)	Maximum Concentration <sup>(1)</sup> (Qualifier)	Units	Location of Maximum	Frequency of Detection	Range of Detection Limits	Screening Concentration <sup>(2)</sup>	Screening Value (Basis) <sup>(3)</sup>	Alternate Screening Values <sup>(4)</sup>	COPC	Rationale <sup>(5)</sup>
-------	---------	-------------	---	---	-------	---------------------	------------------------	---------------------------	--	--	---	------	--------------------------

*Selection:*

ASL Above screening criteria  
 ASL2 Above NJRDCSCC in absence of screening criteria  
 NSC No Screening Criteria

(6) The following surrogate values were used for screening:

- total chromium uses chromium III as a surrogate (see Section 3.2 of the risk assessment)
- total mercury uses elemental mercury as a surrogate (see Section 3.2 of the risk assessment)
- acenaphthylene uses acenaphthene as a surrogate
- 1,3-Dichlorobenzene uses 1,2-Dichlorobenzene as a surrogate
- phenanthrene uses pyrene as a surrogate
- m,p-xylene (sum of isomers) uses the more stringent of m- and p-xylene as a surrogate

(7) PCDD or PCDF concentrations were converted to 2,3,7,8-TCDD equivalent concentrations using the WHO 2005 TEF multiplier (see Section 3.2 of the risk assessment).

(8) Screening values for carbazole is USEPA Region 9 PRG (October 2004) for tapwater.

*Exclusion:*

BSL Below screening criteria  
 BSL2 Below NJRDCSCC in absence of screening criteria  
 NUT Essential nutrient

Shading indicates a COPC

**Table 2.4**  
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN**  
**SOUTH BRANCH CREEK SEDIMENT/BANK SOIL (0 to 0.5 ft bgs)**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Class	CAS No.	Constituent	Minimum Concentration <sup>(1)</sup> (Qualifier)	Maximum Concentration <sup>(1)</sup> (Qualifier)	Units	Location of Maximum	Frequency of Detection	Range of Detection Limits	Screening Concentration <sup>(2)</sup>	Screening Value (Basis) <sup>(3)</sup>	Alternate Screening Values <sup>(4)</sup>	COPC	Rationale <sup>(5)</sup>		
Metal	7429-90-5	Aluminum	3,490	29,300	J	mg/kg	SED-D-3	70 / 70	n/a	29,300	7,700	n	--	Yes ASL	
Metal	7440-36-0	Antimony	1.2	6		mg/kg	SED-A-2	4 / 70	1.1 - 13	6	3.1	n	14	Yes ASL	
Metal	7440-38-2	Arsenic	1.5	5,460	J	mg/kg	LM-A-1	70 / 70	n/a	5,460	0.39	c	20	Yes ASL	
Metal	7440-39-3	Barium	72.2	18,700		mg/kg	LM-B-3	70 / 70	n/a	18,700	1,500	n	700	Yes ASL	
Metal	7440-41-7	Beryllium	0.55	1.4		mg/kg	EC-4	15 / 70	0.54 - 5.9	1.4	16	n	2.0	No BSL	
Metal	7440-43-9	Cadmium	0.62	240		mg/kg	BSL-8	56 / 70	0.53 - 1.9	240	7	n	39	Yes ASL	
Metal	7440-70-2	Calcium	869	154,000	J	mg/kg	SED-4	67 / 70	540 - 610	154,000	NSC		--	No NUT	
Metal	7440-47-3	Chromium <sup>(6)</sup>	6.5	2,690		mg/kg	SED-A-2	70 / 70	n/a	2,690	12,000	n	120,000	No BSL	
Metal	18540-29-9	Chromium, Hexavalent	1.9	7.5		mg/kg	SED-A-3	11 / 30	1.3 - 6.4	7.5	0.29	c	240	Yes ASL	
Metal	7440-48-4	Cobalt	6.1	26.1		mg/kg	SED-A-1	32 / 70	5.4 - 32	26.1	2.3	n	--	Yes ASL	
Metal	7440-50-8	Copper	10.3	1,100		mg/kg	SED-A-2	70 / 70	n/a	1,100	310	n	600	Yes ASL	
Metal	7439-89-6	Iron	5,650	J	247,000	mg/kg	SED-A-1	70 / 70	n/a	247,000	5,500	n	--	Yes ASL	
Metal	7439-92-1	Lead	9.2	3,950		mg/kg	SED-A-2	70 / 70	n/a	3,950	40	++	400	Yes ASL	
Metal	7439-95-4	Magnesium	762	J	21,400	J	mg/kg	SED-C-2, SED-4	58 / 60	540 - 610	21,400	NSC		--	No NUT
Metal	7439-96-5	Manganese	38.7	1,300		mg/kg	SED-A-1	70 / 70	n/a	1,300	180	n	--	Yes ASL	
Metal	7439-97-6	Mercury <sup>(6)</sup>	0.38	3,050		mg/kg	LM-C-4	74 / 74	n/a	3,050	0.56	n	14	Yes ASL	
Metal	22967-92-6	Methyl Mercury	0.0008	0.106		mg/kg	SED-A-1	42 / 42	n/a	0.106	0.78	n	--	No BSL	
Metal	7440-02-0	Nickel	6.4	J	114	mg/kg	LM-E-1	69 / 70	4.9 - 4.9	114	150	n	250	No BSL	
Metal	7440-09-7	Potassium	558	6,910	J	mg/kg	SED-D-3	56 / 70	540 - 1,400	6,910	NSC		--	No NUT	
Metal	7782-49-2	Selenium	1.3	29.3		mg/kg	LM-D-4	14 / 70	1.1 - 13	29.3	39	n	63	No BSL	
Metal	7440-22-4	Silver	1.1	8.1	J	mg/kg	SED-D-3, BSL-8	30 / 70	1.1 - 6.4	8.1	39	n	110	No NUT	
Metal	7440-23-5	Sodium	657	31,500		mg/kg	LM-D-2	56 / 70	530 - 2,900	31,500	NSC		--	No BSL2	
Metal	7440-28-0	Thallium	1.2	1.2		mg/kg	EC-9	1 / 70	0.86 - 12	1.2	NSC	0	2	No BSL2	
Metal	7440-62-2	Vanadium	10.6	129		mg/kg	SED-A-1	70 / 70	n/a	129	0.55	n	370	Yes ASL	
Metal	7440-66-6	Zinc	27.3	8,020		mg/kg	BSL-8	70 / 70	n/a	8,020	2,300	n	1,500	Yes ASL	
Inorganic	57-12-5	Cyanide	0.27	12		mg/kg	BSL-10	9 / 70	0.27 - 3.5	12	160	n	1,100	No BSL	
PCB	NA	Total PCBs <sup>(7)</sup>	0.0144	2.74		mg/kg	SED-8	70 / 70	n/a	2.74	0.24	c	0.49	Yes ASL	
PEST	319-84-6	Alpha-BHC	0.028	0.028		mg/kg	SED-A-1	1 / 70	0.00032 - 0.025	0.028	0.077	c	--	No BSL	
PEST	72-54-8	P,P'-DDD	0.003	2.13		mg/kg	SED-A-2	38 / 70	0.00045 - 0.025	2.13	2	c	3.0	IFE	
PEST	72-55-9	P,P'-DDE	0.0012	0.463	J	mg/kg	LM-E-4	26 / 70	0.00043 - 0.025	0.463	1.4	c	2.0	No BSL	
PEST	50-29-3	P,P'-DDT	0.0017	0.126	J	mg/kg	SED-E-3	30 / 70	0.00053 - 0.025	0.126	1.7	c	2.0	No BSL	
PEST	60-57-1	Dieldrin	0.0016	0.0212		mg/kg	EC-9	7 / 70	0.00043 - 0.025	0.0212	0.03	c	0.042	No BSL	
PEST	72-43-5	Methoxychlor	0.0205	0.0224		mg/kg	BSL-10	2 / 70	0.00057 - 0.064	0.0224	31	n	280	No BSL	
Dioxin	NA	Dioxin 2,3,7,8-TCDD TEQ <sup>(8)</sup>	1.1E-06	9.5E-05		mg/kg	LM-E-3	18 / 18	n/a	9.5E-05	4.5E-06	c	--	Yes ASL	
Furan	NA	Furan 2,3,7,8-TCDD TEQ <sup>(8)</sup>	2.2E-06	2.0E-04		mg/kg	LM-C-2	18 / 18	n/a	2.0E-04	4.5E-06	c	--	Yes ASL	
SVOC	NA	Benzo(a)pyrene TEQ <sup>(9)</sup>	0.025	4.46		mg/kg	SED-A-2	70 / 70	n/a	4.46	0.015	c	0.66	Yes ASL	
SVOC	83-32-9	Acenaphthene	0.0184	J	0.58	J	mg/kg	SED-A-2	9 / 70	0.022 - 0.51	0.58	340	n	3,400	No BSL
SVOC	208-96-8	Acenaphthylene <sup>(6)</sup>	0.027	J	0.645	mg/kg	SED-2	18 / 70	0.018 - 0.41	0.645	340	n	--	No BSL	
SVOC	120-12-7	Anthracene	0.0222	J	1.75	mg/kg	SED-2	38 / 70	0.017 - 0.39	1.75	1,700	n	10,000	No BSL	
SVOC	191-24-2	Benzo(g,h,i)perylene	0.0194	J	1.67	mg/kg	SED-A-2	42 / 70	0.024 - 0.55	1.67	170	n	--	No BSL	
SVOC	117-81-7	Bis(2-Ethylnethyl) Phthalate	0.0409	J	26.5	mg/kg	SED-A-1	53 / 70	0.056 - 2.8	26.5	35	c	49	No BSL	
SVOC	85-68-7	Butyl Benzyl Phthalate	0.124	0.568		mg/kg	SC-1	3 / 70	0.033 - 0.76	0.568	260	c	1,100	No BSL	
SVOC	86-74-8	Carbazole <sup>(10)</sup>	0.0208	J	0.767	mg/kg	SED-A-2	15 / 70	0.017 - 0.41	0.767	24	c	--	No BSL	
SVOC	91-58-7	Chloronaphthalene, 2-	0.0545	J	0.0545	J	mg/kg	SED-1	1 / 70	0.061 - 1.4	0.0545	630	n	--	No BSL
SVOC	132-64-9	Dibenzofuran	0.0391	J	0.337	J	mg/kg	SED-A-2	6 / 70	0.020 - 0.47	0.337	7.8	n	--	No BSL
SVOC	95-50-1	Dichlorobenzene, 1,2-	0.00074	J	7.12	mg/kg	SED-A-2	20 / 70	0.00080 - 0.36	7.12	190	n	5,100	No BSL	
SVOC	541-73-1	Dichlorobenzene, 1,3-	0.00087	J	2.34	mg/kg	LM-C-4	10 / 70	0.00085 - 0.38	2.34	NSC		5,100	No BSL2	
SVOC	106-46-7	Dichlorobenzene, 1,4-	0.0031	J	15.1	mg/kg	SED-A-2	21 / 70	0.00081 - 0.36	15.1	2.4	c	570	Yes ASL	
SVOC	84-66-2	Diethyl Phthalate	0.0198	J	0.0198	J	mg/kg	CF-3	1 / 70	0.019 - 0.43	0.0198	4,900	n	10,000	No BSL
SVOC	131-11-3	Dimethyl Phthalate	0.126	0.652		mg/kg	SED-7	2 / 70	0.019 - 0.43	0.652	NSC		10,000	No BSL2	
SVOC	84-74-2	Di-N-Butyl Phthalate	0.0414	J	7.3	mg/kg	SED-A-2	4 / 70	0.028 - 0.64	7.3	610	n	5,700	No BSL	
SVOC	117-84-0	Di-N-Octyl Phthalate	0.125	J	0.498	J	mg/kg	LM-A-2	3 / 70	0.037 - 0.86	0.498	NSC		1,100	No BSL2
SVOC	206-44-0	Fluoranthene	0.0254	J	33.6	mg/kg	SED-2	61 / 70	0.039 - 0.24	33.6	230	n	2,300	No BSL	
SVOC	86-73-7	Fluorene	0.0207	J	0.555	mg/kg	SED-B-1	11 / 70	0.017 - 0.40	0.555	230	n	2,300	No BSL	
SVOC	118-74-1	Hexachlorobenzene	0.0433	J	0.547	mg/kg	SC-1	7 / 70	0.025 - 0.58	0.547	0.3	c	0.66	Yes ASL	
SVOC	87-68-3	Hexachlorobutadiene	0.0678	J	0.875	mg/kg	CF-2	3 / 70	0.029 - 0.66	0.875	6.2	c	1	No BSL	

**Table 2.4**  
**OCCURRENCE, DISTRIBUTION, AND SELECTION OF CHEMICALS OF POTENTIAL CONCERN**  
**SOUTH BRANCH CREEK SEDIMENT/BANK SOIL (0 to 0.5 ft bgs)**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Class	CAS No.	Constituent	Minimum Concentration <sup>(1)</sup> (Qualifier)	Maximum Concentration <sup>(1)</sup> (Qualifier)	Units	Location of Maximum	Frequency of Detection	Range of Detection Limits	Screening Concentration <sup>(2)</sup>	Screening Value (Basis) <sup>(3)</sup>	Alternate Screening Values <sup>(4)</sup>	COPC	Rationale <sup>(5)</sup>			
SVOC	67-72-1	Hexachloroethane	0.053	J	0.0856	J	mg/kg	LM-C-2	4 / 70	0.022 - 0.59	0.0856	35	c	6	No	BSL
SVOC	91-57-6	Methylnaphthalene, 2-	0.0254	J	0.0254	J	mg/kg	EC-9	1 / 70	0.028 - 0.65	0.0254	31	n	--	No	BSL
SVOC	91-20-3	Naphthalene	0.0459	J	0.254		mg/kg	SED-2	5 / 70	0.024 - 0.56	0.254	3.6	c	230	No	BSL
SVOC	85-01-8	Phenanthrene <sup>(6)</sup>	0.0315	J	5.84		mg/kg	SED-A-2	47 / 70	0.019 - 0.44	5.84	170	n	--	No	BSL
SVOC	129-00-0	Pyrene	0.0215	J	16.3		mg/kg	SED-2	64 / 70	0.071 - 0.24	16.3	170	n	1,700	No	BSL
SVOC	120-82-1	Trichlorobenzene, 1,2,4-	0.0018	J	11.8		mg/kg	SED-A-2	18 / 70	0.00061 - 0.28	11.8	22	c	68	No	BSL
VOC	79-20-9	Acetic Acid, Methyl Ester	0.656	J	30.9	J	mg/kg	LM-E-4	18 / 38	0.0019 - 1.1	30.9	7,800	n	--	No	BSL
VOC	67-64-1	Acetone	0.0172		0.636	J	mg/kg	SED-5	29 / 70	0.0038 - 2.3	1.52	6,100	n	1,000	No	BSL
VOC	100-52-7	Benzaldehyde	0.305	J	0.305		mg/kg	SED-7	1 / 38	0.048 - 1.1	0.305	780	n	--	No	BSL
VOC	71-43-2	Benzene	0.0044	J	0.135	J	mg/kg	LM-B-1	3 / 70	0.00064 - 0.38	0.135	1.1	c	3	No	BSL
VOC	78-93-3	Butanone, 2- (MEK)	0.0106		1.76	J	mg/kg	LM-E-4	10 / 70	0.0036 - 2.1	1.76	2,800	n	1,000	No	BSL
VOC	75-15-0	Carbon Disulfide	0.0013	J	0.819	J	mg/kg	LM-D-3	28 / 70	0.00073 - 0.43	0.819	82	n	--	No	BSL
VOC	108-90-7	Chlorobenzene	0.0142	J	120		mg/kg	LM-C-4	9 / 70	0.00058 - 0.34	120	29	n	37	Yes	ASL
VOC	67-66-3	Chloroform	0.0012	J	0.978	J	mg/kg	LM-A-4	4 / 70	0.00077 - 0.46	0.978	0.29	c	19	Yes	ASL
VOC	107-06-2	Dichloroethane, 1,2-	0.332		0.449	J	mg/kg	LM-A-3	2 / 70	0.00072 - 0.43	0.449	0.43	c	6	No	IFD
VOC	75-35-4	Dichloroethene, 1,1-	0.00089	J	0.0011	J	mg/kg	BSL-1	2 / 70	0.00091 - 0.54	0.0011	24	n	570	No	BSL
VOC	100-41-4	Ethylbenzene	0.0325		0.0325		mg/kg	SED-A-2	1 / 70	0.00060 - 0.35	0.0325	5.4	c	1,000	No	BSL
VOC	75-09-2	Methylene Chloride	0.0063	J	0.619		mg/kg	SED-2	6 / 70	0.00092 - 0.54	0.619	11	c	49	No	BSL
VOC	127-18-4	Tetrachloroethylene (PCE)	0.285	J	0.285	J	mg/kg	LM-A-4	1 / 70	0.0011 - 0.65	0.285	0.55	c	4	No	BSL
VOC	108-88-3	Toluene	0.0048	J	0.23		mg/kg	SED-9	2 / 70	0.00072 - 0.43	0.23	500	n	1,000	No	BSL
VOC	76-13-1	Trichlorotrifluoroethane	0.0197	J	0.0197	J	mg/kg	SED-A-2	1 / 38	0.0011 - 0.67	0.0197	--	--	--	No	BSL
VOC	XYLMP	Xylene, M,P- (sum of isomers) <sup>(6)</sup>	0.0274		0.0274		mg/kg	SED-A-2	1 / 38	0.0012 - 0.69	0.0274	340	n	--	No	BSL
VOC	95-47-6	Xylene, O-	0.0083	J	0.0083	J	mg/kg	SED-A-2	1 / 38	0.00066 - 0.39	0.0083	380	n	--	No	BSL
VOC	1330-20-7	Xylenes, Mixed	0.0357		0.0357		mg/kg	SED-A-2	1 / 70	0.00066 - 0.39	0.0357	63	n	410	No	BSL

**Notes:**

(1) Minimum/maximum detected concentration.

(2) Maximum detected concentration used as the screening concentration.

(3) Screening values are USEPA Regional Screening Levels (RSLS) for residential soil (updated November 2010) based on the following endpoints:

c cancer endpoint and a target cancer risk of  $1 \times 10^{-6}$ 

n non-cancer endpoint and a target hazard quotient of 1

++ based on USEPA's Integrated Exposure Uptake Biokinetic (IEUBK) model.

(4) Alternate screening values are New Jersey Residential Direct Contact Soil Cleanup Criteria (NJRDCSCC), which are available on-line at <http://www.nj.gov/dep/srp/guidance/scc/>.

(5) Rationale Codes for selection or exclusion as COPC:

**Selection:**

ASL Above screening criteria

ASL2 Above NJRDCSCC in absence of screening criteria

NSC No Screening Criteria

**Exclusion:**

BSL Below screening criteria

BSL2 Below NJRDCSCC in absence of screening criteria

NUT Essential nutrient

IFD Infrequent exceedance (1 exceedance; not a COPC in any other media)

IFD Infrequent detection (&lt;5%)

(6) The following surrogate values were used for screening:

• total chromium uses chromium III as a surrogate (see Section 3.2 of the risk assessment)

• total mercury uses elemental mercury as a surrogate (see Section 3.2 of the risk assessment)

• acenaphthylene uses acenaphthene as a surrogate

• benzo(g,h,i)perylene uses pyrene as a surrogate

• phenanthrene uses pyrene as a surrogate

• m,p-xylene (sum of isomers) uses the more stringent of m- and p-xylene as a surrogate

(7) Aroclor results were summed and evaluated as Total PCBs using USEPA's "High Risk and Persistence" cancer potency estimates (see Section 3.2 of the risk assessment).

(8) PCDD or PCDF concentrations were converted to 2,3,7,8-TCDD equivalent concentrations using the WHO 2005 TEF multiplier (see Section 3.2 of the risk assessment).

(9) Carcinogenic PAH concentrations were converted to benzo(a)pyrene equivalent concentrations using USEPA default TEF multipliers (see Section 3.2 of the risk assessment).

(10) Screening values for carbazole is USEPA Region 9 PRG (October 2004) for tapwater.

**Definitions:**

PCB = Polychlorinated biphenyl

PEST = Pesticide

SVOC = Semivolatile organic compound

VOC = Volatile organic compound

J = Estimated value

ft bgs = Feet below ground surface

mg/kg = Milligrams per kilogram

COPC = Chemical of potential concern

**TABLE 3.1**  
**EXPOSURE POINT CONCENTRATION SUMMARY**  
**SURFACE SOIL (0 to 2 ft bgs)**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Scenario Timeframe:</b> Future
<b>Medium:</b> Surface Soil (0 to 2 ft bgs)
<b>Exposure Medium:</b> Surface Soil (0 to 2 ft bgs)

Exposure Point	Chemical Class	Constituent of Potential Concern	CAS No.	Units	Mean <sup>(1)</sup>	UCL <sup>(2)</sup>	Distribution <sup>(3)</sup>	Maximum (Qualifier) <sup>(4)</sup>	Exposure Point Concentration			
									Value	Units	EPC Statistic <sup>(2)</sup>	Rationale <sup>(5)</sup>
Surface Soil (0 to 2 ft bgs)	Metal	Aluminum	749-90-5	mg/kg	11,976	12,471	N/AG	27,700	12,471	mg/kg	95% Student's-t UCL	UCL-N
	Metal	Antimony	7440-36-0	mg/kg	5.69	12.7	NA	198 J	12.7	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	Metal	Arsenic	7440-38-2	mg/kg	18.0	22.3	NA	331 J	22.3	mg/kg	95% KM (BCA) UCL	UCL-NP
	Metal	Barium	7440-39-3	mg/kg	1,348	1,982	NA	10,500	1,982	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	Metal	Beryllium	7440-41-7	mg/kg	2.16	3.80	NA	27.3 J	3.80	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	Metal	Cadmium	7440-43-9	mg/kg	2.83	3.82	NA	87.5 J	3.82	mg/kg	95% KM (BCA) UCL	UCL-NP
	Metal	Chromium, Hexavalent	18540-29-9	mg/kg	1.50	2.86	N/LN/G	7.30 J	2.86	mg/kg	95% KM (Percentile Bootstrap) UCL	UCL-NP
	Metal	Cobalt	7440-48-4	mg/kg	44.1	61.0	NA	961	61.0	mg/kg	95% KM (BCA) UCL	UCL-NP
	Metal	Copper	7440-50-8	mg/kg	767	1,745	NA	18,000	1,745	mg/kg	97.5% Chebyshev (Mean, Sd) UCL	UCL-NP
	Metal	Iron	7439-89-6	mg/kg	47,633	62,897	NA	374,000	62,897	mg/kg	95% Chebyshev (Mean, Sd) UCL	UCL-NP
	Metal	Lead	7439-92-1	mg/kg	596	1,501	NA	15,450	596	mg/kg	95% Chebyshev (Mean, Sd) UCL	UCL-NP
	Metal	Manganese	7439-96-5	mg/kg	579	779	NA	4,810 J	779	mg/kg	95% Chebyshev (Mean, Sd) UCL	UCL-NP
	Metal	Mercury (elemental)	(7,8)	mg/kg	46.0	123	NA	787	123	mg/kg	99% KM (Chebyshev) UCL	UCL-NP
	Metal	Mercury (inorganic)	(7)	mg/kg	414	1,103	NA	7,083	1,103	mg/kg	99% KM (Chebyshev) UCL	UCL-NP
	Metal	Nickel	7440-02-0	mg/kg	91.5	148	NA	1,310 J	148	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	Metal	Silver	7440-22-4	mg/kg	1.38	2.31	NA	53.2 J	2.31	mg/kg	95% KM % Bootstrap) UCL	UCL-NP
	Metal	Vanadium	7440-62-2	mg/kg	47.8	50.5	LN/G	249	50.5	mg/kg	95% KM (BCA) UCL	UCL-NP
	Metal	Zinc	7440-66-6	mg/kg	4,939	13,359	NA	114,000	13,359	mg/kg	97.5% Chebyshev (Mean, Sd) UCL	UCL-NP
	PCB	Total PCBs	NA	mg/kg	1.65	3.97	NA	18.5 J	3.97	mg/kg	99% Chebyshev (Mean, Sd) UCL	UCL-NP
	Dioxin	Dioxin 2,3,7,8-TCDD TEQ	NA	mg/kg	6.98E-06	1.21E-05	LN/G	2.12E-05	1.21E-05	mg/kg	95% Approximate Gamma UCL	UCL-G
	Furan	Furan 2,3,7,8-TCDD TEQ	NA	mg/kg	1.58E-04	4.43E-04	LN/G	8.85E-04	4.43E-04	mg/kg	95% Adjusted Gamma UCL	UCL-G
	SVOC	Benz(a)pyrene TEQ	NA	mg/kg	0.943	4.16	NA	102 J	4.16	mg/kg	97.5% KM Chebyshev (Mean, Sd) UCL	UCL-NP
	SVOC	Bis(2-Ethylhexyl) Phthalate	117-81-7	mg/kg	1.24	4.07	NA	129 J	4.07	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	SVOC	Dibenzofuran	132-64-9	mg/kg	0.267	0.669	NA	14.2	0.669	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	SVOC	Dichlorobenzene, 1,4-	106-46-7	mg/kg	0.119	0.144	NA	4.17	0.144	mg/kg	95% KM (BCA) UCL	UCL-NP
	SVOC	Hexachlorobenzene	118-74-1	mg/kg	11.0	57.2	NA	1,440	57.2	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	SVOC	Hexachlorobutadiene	87-68-3	mg/kg	0.575	1.97	NA	60.7 J	1.97	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	SVOC	Naphthalene	91-20-3	mg/kg	0.451	0.954	NA	51.2	0.954	mg/kg	95% KM (BCA) UCL	UCL-NP
	VOC	Benzene	71-43-2	mg/kg	0.108	0.520	NA	18.9	0.520	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	VOC	Chloroform	67-66-3	mg/kg	0.0828	0.329	LN	7.22	0.329	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	VOC	Tetrachloroethylene (PCE)	127-18-4	mg/kg	0.0231	0.0348	LN	0.763	0.0348	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	VOC	Trichloroethylene (TCE)	79-01-6	mg/kg	0.571	2.83	NA	62.3 J	2.83	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	VOC	Vinyl Chloride	75-01-4	mg/kg	0.0166	0.0101	N/LN/G	0.0785 J	0.0101	mg/kg	95% KM (Percentile Bootstrap) UCL	UCL-NP

**Notes:**

(1) Arithmetic mean calculated using one-half the method detection limit (MDL) for non-detect samples.

(2) Upper confidence limit (UCL) on the mean is the recommended UCL calculated using USEPA's ProUCL 4.0 Statistical Software.

(3) At the 5% significance level, data appear to follow the following distributions:

N = Normal      LN = Lognormal

NA = Not discernible      G = Gamma

(4) Maximum detected concentration. "J" qualifier indicates an estimated value.

(5) Rationale Codes:

UCL-N = UCL assuming normal distribution

UCL-LN = UCL assuming lognormal distribution

UCL-G = UCL assuming gamma distribution

UCL-NP = non-parametric UCL

(6) The Adult Lead Model for estimating risk associated with exposure to lead utilizes the arithmetic mean.

(7) Concentrations of total mercury were assumed to be 10% elemental mercury and 90% inorganic mercury based on the results of the mercury speciation analysis.

(8) Elemental mercury was observed in some shallow soils around the brine cell buildings 230 and 240. It was not possible to analyze these samples using conventional methods. Thus, the EPCs do not account for visible elemental mercury. However, it is assumed that areas with visible elemental mercury pose unacceptable risks to potential on-site receptors.

**Definitions:**

PCB = Polychlorinated biphenyl

SVOC = Semivolatile organic compound

VOC = Volatile organic compound

ft bgs = Feet below ground surface

mg/kg = Milligrams per kilogram

**TABLE 3.2**  
**EXPOSURE POINT CONCENTRATION SUMMARY**  
**MIXED SOIL (0 to 10 ft bgs)**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

**Scenario Timeframe:** Current and Future  
**Medium:** Mixed Soil (0 to 10 ft bgs)  
**Exposure Medium:** Mixed Soil (0 to 10 ft bgs)

Exposure Point	Chemical Class	Constituent of Potential Concern	CAS No.	Units	Mean <sup>(1)</sup>	UCL <sup>(2)</sup>	Distribution <sup>(3)</sup>	Maximum (Qualifier) <sup>(4)</sup>	Exposure Point Concentration			
									Value	Units	EPC Statistic <sup>(2)</sup>	Rationale <sup>(5)</sup>
Mixed Soil (0 to 10 ft bgs)	Metal	Aluminum	749-90-5	mg/kg	11,574	12,025	N/G	27,700	12,025	mg/kg	95% Student's-t UCL	UCL-N
	Metal	Antimony	7440-36-0	mg/kg	8.15	17.4	NA	198 J	17.4	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	Metal	Arsenic	7440-38-2	mg/kg	25.4	41.1	NA	391 J	41.1	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	Metal	Barium	7440-39-3	mg/kg	1,227	1,796	NA	10,500	1,796	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	Metal	Beryllium	7440-41-7	mg/kg	2.06	3.30	NA	27.2 J	3.30	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	Metal	Cadmium	7440-43-9	mg/kg	2.61	4.66	NA	87.5 J	4.66	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	Metal	Chromium, Hexavalent	18540-29-9	mg/kg	1.43	2.42	N/LN/G	7.30 J	2.42	mg/kg	95% KM (t) UCL	UCL-NP
	Metal	Cobalt	7440-48-4	mg/kg	41.0	55.5	NA	961	55.5	mg/kg	95% KM (BCA) UCL	UCL-NP
	Metal	Copper	7440-50-8	mg/kg	706	1,586	NA	18,000	1,586	mg/kg	97.5% Chebyshev (Mean, Sd) UCL	UCL-NP
	Metal	Iron	7439-89-6	mg/kg	45,182	59,607	NA	374,000	59,607	mg/kg	95% Chebyshev (Mean, Sd) UCL	UCL-NP
	Metal	Lead	7439-92-1	mg/kg	581	1,408	NA	15,450	656	mg/kg	Arithmetic Mean	(6)
	Metal	Manganese	7439-96-5	mg/kg	539	715	NA	4,810 J	715	mg/kg	95% Chebyshev (Mean, Sd)	UCL-NP
	Metal	Mercury (elemental)	(7,8)	mg/kg	42.5	114	NA	787	114	mg/kg	99% Chebyshev (Mean, Sd) UCL	UCL-NP
	Metal	Mercury (inorganic)	(7)	mg/kg	383	1,022	NA	7,083	1,022	mg/kg	99% Chebyshev (Mean, Sd) UCL	UCL-NP
	Metal	Nickel	7440-02-0	mg/kg	82.1	102	NA	1,310 J	102	mg/kg	95% KM (BCA) UCL	UCL-NP
	Metal	Silver	7440-22-4	mg/kg	1.29	2.10	N	53.2 J	2.10	mg/kg	95% KM (% Bootstrap) UCL	UCL-NP
	Metal	Vanadium	7440-62-2	mg/kg	42.9	44.8	L/N/G	126 J	44.8	mg/kg	95% KM (BCA) UCL	UCL-NP
	Metal	Zinc	7440-66-6	mg/kg	4,256	11,141	NA	113,000 J	11,141	mg/kg	97.5% Chebyshev (Mean, Sd) UCL	UCL-NP
	PCB	Total PCBs	NA	mg/kg	1.40	3.45	NA	21.6 J	3.45	mg/kg	99% Chebyshev (Mean, Sd) UCL	UCL-NP
	Dioxin	Dioxin 2,3,7,8-TCDD TEQ	NA	mg/kg	7,67E-06	1.15E-05	L/N/G	2.12E-05	1.15E-05	mg/kg	95% Approximate Gamma UCL	UCL-G
	Furan	Furan 2,3,7,8-TCDD TEQ	NA	mg/kg	1.22E-04	7.23E-04	LN	8.85E-04	7.23E-04	mg/kg	99% Chebyshev (Mean, Sd) UCL	UCL-LN
	SVOC	Benz(a)pyrene TEQ	NA	mg/kg	0.728	2.35	NA	50.8 J	2.35	mg/kg	97.5% Chebyshev (Mean, Sd) UCL	UCL-NP
	SVOC	Bis(2-Ethylhexyl) Phthalate	117-81-7	mg/kg	1.15	3.78	NA	129 J	3.78	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	SVOC	Chloroaniline, p-	106-47-8	mg/kg	0.215	0.129	N/LN/G	1.75 J	0.129	mg/kg	95% KM (Percentile Bootstrap) UCL	UCL-NP
	SVOC	Dibenzofuran	132-64-9	mg/kg	0.659	2.26	NA	78.0 J	2.26	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	SVOC	Dichlorobenzene, 1,2-	95-50-1	mg/kg	2.07	9.95	NA	388 J	9.95	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	SVOC	Dichlorobenzene, 1,4-	106-46-7	mg/kg	0.535	2.13	NA	79.0 J	2.13	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	SVOC	Hexachlorobenzene	118-74-1	mg/kg	6.84	29.5	NA	720 J	29.5	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	SVOC	Hexachlorobutadiene	87-68-3	mg/kg	1.07	4.94	NA	117 J	4.94	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	SVOC	Methylnaphthalene, 2-	91-57-6	mg/kg	0.685	2.45	NA	86.0 J	2.45	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	SVOC	Naphthalene	91-20-3	mg/kg	1.42	4.65	NA	79.0 J	4.65	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	SVOC	Phenanthrene	85-01-8	mg/kg	1.94	7.33	NA	172 J	7.33	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	SVOC	Trichlorobenzene, 1,2,4-	120-82-1	mg/kg	11.0	58.2	NA	2,321 J	58.2	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	VOC	Benzene	71-43-2	mg/kg	0.532	2.66	NA	71.5 J	2.66	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	VOC	Chlorobenzene	108-90-7	mg/kg	0.285	1.36	LN	37.2 J	1.36	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	VOC	Chloroform	67-66-3	mg/kg	0.222	0.895	NA	22.3 J	0.895	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	VOC	Ethylbenzene	100-41-4	mg/kg	0.0680	0.274	NA	6.65 J	0.274	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	VOC	Methylene chloride	75-09-2	mg/kg	1.66	11.8	NA	345 J	11.8	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	VOC	Tetrachloroethylene (PCE)	127-18-4	mg/kg	0.0614	0.174	NA	3.25 J	0.174	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	VOC	Trichloroethylene (TCE)	79-01-6	mg/kg	0.879	3.77	NA	69.5 J	3.77	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	VOC	Vinyl Chloride	75-01-4	mg/kg	0.0461	0.00892	N/LN/G	0.0785 J	0.00892	mg/kg	95% KM (Percentile Bootstrap) UCL	UCL-NP

**Notes:**

(1) Arithmetic mean calculated using one-half the method detection limit (MDL) for non-detect samples.

(2) Upper confidence limit (UCL) on the mean is the recommended UCL calculated using USEPA's ProUCL 4.0 Statistical Software.

(3) At the 5% significance level, data appear to follow the following distributions:

N = Normal      LN = Lognormal

NA = Not discernible      G = Gamma

(4) Maximum detected concentration. "J" qualifier indicates an estimated value.

(5) Rationale Codes:

UCL-N = UCL assuming normal distribution

UCL-LN = UCL assuming lognormal distribution

UCL-G = UCL assuming gamma distribution

UCL-NP = non-parametric UCL

(6) The Adult Lead Model for estimating risk associated with exposure to lead utilizes the arithmetic mean.

(7) Concentrations of total mercury were assumed to be 10% elemental mercury and 90% inorganic mercury based on the results of the mercury speciation analysis.

(8) Elemental mercury was observed in some shallow soils around the brine cell buildings 230 and 240. It was not possible to analyze these samples using conventional methods. Thus, the EPCs do not account for visible elemental mercury. However, it is assumed that areas with visible elemental mercury pose unacceptable risks to potential on-site receptors.

**Definitions:**

PCB = Polychlorinated biphenyl

SVOC = Semivolatile organic compound

VOC = Volatile organic compound

ft bgs = Feet below ground surface

mg/kg = Milligrams per kilogram

**TABLE 3.3**  
**EXPOSURE POINT CONCENTRATION SUMMARY**  
**OVERBURDEN GROUNDWATER**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Scenario Timeframe:</b> Current/Future
<b>Medium:</b> Groundwater
<b>Exposure Medium:</b> Groundwater

<b>Exposure Point</b>	<b>Chemical Class</b>	<b>Constituent of Potential Concern</b>	<b>CAS No.</b>	<b>Units</b>	<b>Mean<sup>(1)</sup></b>	<b>Maximum (Qualifier)<sup>(2)</sup></b>	<b>Exposure Point Concentration (EPC)</b>			
							<b>Value</b>	<b>Units</b>	<b>EPC Statistic<sup>(3)</sup></b>	<b>Rationale</b>
Overburden Groundwater	Metal	Antimony	7440-36-0	µg/L	7.35	6.0 J	6.0	µg/L	Maximum	(5)
	Metal	Arsenic	7440-38-2	µg/L	67.4	275 J	275	µg/L	Maximum	
	Metal	Barium	7440-39-3	µg/L	983.9	14,200	14,200	µg/L	Maximum	
	Metal	Cadmium	7440-43-9	µg/L	4.785	22.9	22.9	µg/L	Maximum	
	Metal	Cobalt	7440-48-4	µg/L	45.75	190	190	µg/L	Maximum	
	Metal	Iron	7439-89-6	µg/L	32,814	346,000	346,000	µg/L	Maximum	
	Metal	Manganese	7439-96-5	µg/L	11,901	219,000	219,000	µg/L	Maximum	
	Metal	Mercury	7439-97-6	µg/L	14.25	233	233	µg/L	Maximum	
	Metal	Methyl Mercury	22967-92-6	µg/L	56.01	168	168	µg/L	Maximum	
	Metal	Vanadium	7440-62-2	µg/L	43.28	136 J	136	µg/L	Maximum	
	Metal	Zinc	7440-66-6	µg/L	138.10	1,690	1,690	µg/L	Maximum	
	Metal	Cyanide	57-12-5	µg/L	11.63	77	77	µg/L	Maximum	
	Dioxin	Dioxin 2,3,7,8-TCDD TEQ	NA	µg/L	1.9E-05	1.9E-05	1.9E-05	µg/L	Maximum	
	Furan	Furan 2,3,7,8-TCDD TEQ	NA	µg/L	1.6E-04	1.6E-04	1.6E-04	µg/L	Maximum	
	SVOC	Benz(a)anthracene	56-55-3	µg/L	0.077	0.775	0.775	µg/L	Maximum	
	SVOC	Carbazole	86-74-8	µg/L	9.164	143	143	µg/L	Maximum	
	SVOC	Chloroaniline, p-	106-47-8	µg/L	768.67	4,460 J	4,460	µg/L	Maximum	
	SVOC	Chlorophenol, 2-	95-57-8	µg/L	2.95	26.1	26.1	µg/L	Maximum	
	SVOC	Dibenzofuran	132-64-9	µg/L	1.87	16.2	16.2	µg/L	Maximum	
	SVOC	Dichlorobenzene, 1,2-	95-50-1	µg/L	410.1	4,220	4,220	µg/L	Maximum	
	SVOC	Dichlorobenzene, 1,3-	541-73-1	µg/L	41.70	199	199	µg/L	Maximum	
	SVOC	Dichlorobenzene, 1,4-	106-46-7	µg/L	73.42	582	582	µg/L	Maximum	
	SVOC	Dichlorophenol, 2,4-	120-83-2	µg/L	2.224	11.7	11.7	µg/L	Maximum	
	SVOC	Hexachlorobenzene	118-74-1	µg/L	0.06	1.0	1.0	µg/L	Maximum	
	SVOC	Naphthalene	91-20-3	µg/L	72.38	561	561	µg/L	Maximum	
	SVOC	Nitrobenzene	98-95-3	µg/L	3.104	55 J	55	µg/L	Maximum	
	SVOC	Pentachlorophenol	87-86-5	µg/L	0.251	1.87	1.87	µg/L	Maximum	
	SVOC	Trichlorobenzene, 1,2,4-	120-82-1	µg/L	17.73	285	285	µg/L	Maximum	
	VOC	Benzene	71-43-2	µg/L	94.36	848	848	µg/L	Maximum	
	VOC	Chlorobenzene	108-90-7	µg/L	1,450	16,200	16,200	µg/L	Maximum	
	VOC	Chloroform	67-66-3	µg/L	0.557	3.5	3.5	µg/L	Maximum	
	VOC	Dichloroethane, 1,1-	75-34-3	µg/L	0.502	2.6	2.6	µg/L	Maximum	
	VOC	Dichloroethane, 1,2-	107-06-2	µg/L	0.537	1.8	1.8	µg/L	Maximum	
	VOC	Ethylbenzene	100-41-4	µg/L	3.768	30.4	30.4	µg/L	Maximum	
	VOC	Methylene Chloride	75-09-2	µg/L	103.6	1,960	1,960	µg/L	Maximum	
	VOC	Tetrachloroethylene (PCE)	127-18-4	µg/L	0.717	6.9 J	6.9	µg/L	Maximum	
	VOC	Vinyl Chloride	75-01-4	µg/L	0.50	0.71 J	0.71	µg/L	Maximum	
	VOC	Xylenes, Mixed	1330-20-7	µg/L	12.38	128	128	µg/L	Maximum	

**Notes:**

- (1) Arithmetic mean calculated using one-half the method detection limit (MDL) for non-detect results.  
 (2) Upper Confidence Limit (UCL) on the mean. UCL is the statistic recommended by USEPA's ProUCL Statistical Software (Version 4.0).

(3) At the 5% significance level, data appear to follow the following distributions:

N = Normal                            LN = Lognormal

NA = Not discernible                (A)G = (Approximate) Gamma

(2) Maximum detected concentration. "J" indicates an estimated value.

(3) It was assumed receptors may ingest groundwater from a well installed at a particular location or may have direct contact with groundwater in a construction/utility trench at a particular location. Therefore, the maximum on-site concentration was conservatively selected as the groundwater EPC.

**Definitions:**

SVOC = Semivolatile organic compound

VOC = Volatile organic compound

J = Estimated value

µg/L Micrograms per liter

**TABLE 3.4**  
**EXPOSURE POINT CONCENTRATION SUMMARY**  
**SOUTH BRANCH CREEK SEDIMENT/BANK SOIL (0 to 0.5 ft bgs)**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Scenario Timeframe:</b> Current/Future
<b>Medium:</b> Surficial Sediment/ Bank Soil (0 to 0.5 ft bgs)
<b>Exposure Medium:</b> Surficial Sediment/Bank Soil (0 to 0.5 ft bgs)

Exposure Point	Chemical Class	Constituent of Potential Concern	CAS No.	Units	Mean <sup>(1)</sup>	UCL <sup>(2)</sup>	Distribution <sup>(3)</sup>	Maximum (Qualifier) <sup>(4)</sup>	Exposure Point Concentration			
									Value	Units	EPC Statistic <sup>(2)</sup>	Rationale <sup>(5)</sup>
Surficial Sediment/ Bank Soil (0 to 0.5 ft bgs) in/along SBC	Metal	Aluminum	749-90-5	mg/kg	12,171	13,299	N/LN/G	29,300 J	13,299	mg/kg	95% Student's-t UCL	UCL-N
	Metal	Antimony	7440-36-0	mg/kg	2.09	5.24	N/LN/G	6.00	5.24	mg/kg	95% KM (Percentile Bootstrap) UCL	UCL-NP
	Metal	Arsenic	7440-38-2	mg/kg	257	395	LN	5,460 J	395	mg/kg	95% H-UCL	UCL-LN
	Metal	Barium	7440-39-3	mg/kg	5,749	7,090	G	18,700	7,090	mg/kg	95% Approximate Gamma UCL	UCL-G
	Metal	Cadmium	7440-43-9	mg/kg	22.9	43.1	LN/G	240	43.1	mg/kg	95% KM (Chebyshev) UCL	UCL-NP
	Metal	Chromium, Hexavalent	18540-29-9	mg/kg	2.62	3.88	N/LN/G	7.50	3.88	mg/kg	95% KM (Percentile Bootstrap) UCL	UCL-NP
	Metal	Cobalt	7440-48-4	mg/kg	8.81	9.90	NA	26.1	9.90	mg/kg	95% KM (% Bootstrap) UCL	UCL-NP
	Metal	Copper	7440-50-8	mg/kg	213	315	LN	1,100	315	mg/kg	95% H-UCL	UCL-LN
	Metal	Iron	7439-89-6	mg/kg	33,327	37,926	LN	247,000	37,926	mg/kg	95% H-UCL	UCL-LN
	Metal	Lead	7439-92-1	mg/kg	418	531	LN/AG	3,950	418	mg/kg	Arithmetic Mean	<sup>(6)</sup>
	Metal	Manganese	7439-96-5	mg/kg	245	290	LN	1,300	290	mg/kg	95% H-UCL	UCL-LN
	Metal	Mercury (elemental) <sup>(7)</sup>	7439-97-6	mg/kg	32.2	101	NA	305	101	mg/kg	99% Chebyshev (Mean, Sd) UCL	UCL-NP
	Metal	Mercury (inorganic) <sup>(7)</sup>	7439-97-6	mg/kg	290	913	NA	2,745	913	mg/kg	99% Chebyshev (Mean, Sd) UCL	UCL-NP
	Metal	Vanadium	7440-62-2	mg/kg	42.4	48.5	LN/AG	129	48.5	mg/kg	95% Approximate Gamma UCL	UCL-G
	Metal	Zinc	7440-66-6	mg/kg	1,219	1,568	LN/G	8,020	1,568	mg/kg	95% Approximate Gamma UCL	UCL-G
	PCB	Total PCBs	NA	mg/kg	0.182	0.519	NA	2.74	0.519	mg/kg	97.5% Chebyshev (Mean, Sd) UCL	UCL-NP
	Dioxin	Dioxin 2,3,7,8-TCDD TEQ	NA	mg/kg	1.3E-05	2.6E-05	LN	9.5E-05	2.6E-05	mg/kg	95% Chebyshev (MVUE) UCL	UCL-LN
	Furan	Furan 2,3,7,8-TCDD TEQ	NA	mg/kg	6.6E-05	1.1E-04	G	2.0E-04	1.1E-04	mg/kg	95% Approximate Gamma UCL	UCL-G
	SVOC	Benzo(a)pyrene TEQ	NA	mg/kg	0.476	0.603	LN	4.46	0.603	mg/kg	95% H-UCL	UCL-LN
	SVOC	Dichlorobenzene, 1,4-	106-46-7	mg/kg	0.454	2.05	LN	15.1	2.05	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	SVOC	Hexachlorobenzene	118-74-1	mg/kg	0.065	0.071	LN/G	0.547	0.071	mg/kg	95% KM (t) UCL	UCL-NP
	VOC	Chlorobenzene	108-90-7	mg/kg	1.82	13.1	LN	120	13.1	mg/kg	97.5% KM (Chebyshev) UCL	UCL-NP
	VOC	Chloroform	67-66-3	mg/kg	0.051	0.442	N/LN/G	0.978 J	0.442	mg/kg	95% KM (Percentile Bootstrap) UCL	UCL-NP

**Notes:**

- (1) Arithmetic mean calculated using one-half the method detection limit (MDL) for non-detect samples.  
 (2) Upper confidence limit (UCL) on the mean is the recommended UCL calculated using USEPA's ProUCL 4.0 Statistical Software.

(3) At the 5% significance level, data appear to follow the following distributions:

N = Normal      LN = Lognormal      AG = Approximate Gamma  
 NA = Not discernible      G = Gamma

(4) Maximum detected concentration. "J" qualifier indicates an estimated value.

(5) Rationale Codes:

UCL-N = UCL assuming normal distribution  
 UCL-LN = UCL assuming lognormal distribution  
 UCL-G = UCL assuming gamma distribution  
 UCL-NP = non-parametric UCL

(6) The Adult Lead Model for estimating risk associated with exposure to lead utilizes the arithmetic mean.

(7) Concentrations of total mercury were assumed to be 10% elemental mercury and 90% inorganic mercury based on the results of the mercury speciation analysis.

**Definitions:**

PCB = Polychlorinated biphenyl  
 SVOC = Semivolatile organic compound  
 VOC = Volatile organic compound  
 ft bgs = Feet below ground surface  
 mg/kg = Milligrams per kilogram

**TABLE 4.1a.RME**  
**VALUES USED FOR DAILY INTAKE CALCULATIONS - RME**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Timeframe:</b> Future
<b>Medium:</b> Surface Soil (0 to 2 ft bgs)
<b>Exposure Medium:</b> Surface Soil (0 to 2 ft bgs)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Average Daily Dose (ADD)/ Average Daily Exposure (ADE)
Ingestion	Commercial/ Industrial Worker	Adult	Surface Soil (0 to 2 ft bgs)	CS	Chemical Concentration in Soil	chemical-specific	mg/kg	See Table 3.1	$\text{ADD}_{\text{ING}} \text{ (mg/kg-day)} = \frac{\text{CS} \times \text{IR-S} \times \text{FI} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$
				IR <sub>Soil</sub>	Ingestion Rate - Soil	100	mg/day	USEPA, 2002 (1)	
				FI	Fraction from Site	1	--	BPJ (2)	
				EF	Exposure Frequency	250	days/year	USEPA, 2002 (3)	
				ED	Exposure Duration	25	years	USEPA, 2004 (4)	
				CF	Conversion Factor	1.0E-06	kg/mg	--	
				BW	Body Weight	70	kg	USEPA, 1991 (5)	
				AT <sub>C</sub>	Avg. Time - Cancer	25,550	days	USEPA, 1989 (6)	
				AT <sub>NC</sub>	Avg. Time - Non-Cancer	9.125	days	USEPA, 1989 (7)	
Dermal	Commercial/ Industrial Worker	Adult	Surface Soil (0 to 2 ft bgs)	CS	Chemical Concentration in Soil	chemical-specific	mg/kg	See Table 3.1	$\text{ADD}_{\text{DERM}} \text{ (mg/kg-day)} = \frac{\text{CS} \times \text{SA} \times \text{AF} \times \text{DAF} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$
				CFs	Conversion Factor	1.0E-06	kg/mg	--	
				SA	Skin Surface Area	3,300	cm <sup>2</sup>	USEPA, 2004 (8)	
				AF	Soil-to-Skin Adherence Factor	0.2	mg/cm <sup>2</sup>	USEPA, 2002 (9)	
				DAF	Dermal Absorption Factor	chemical-specific	unitless	--	
				EF	Exposure Frequency	250	days/year	USEPA, 2002 (3)	
				ED	Exposure Duration	25	years	USEPA, 2004 (4)	
				BW	Body Weight	70	kg	USEPA, 1991 (5)	
				AT <sub>C</sub>	Avg. Time - Cancer	25,550	day	USEPA, 1989 (6)	
				AT <sub>NC</sub>	Avg. Time - Non-Cancer	9.125	day	USEPA, 1989 (7)	
Inhalation	Commercial/ Industrial Worker	Adult	Particulates/ Vapors in Outdoor Air	CA	Concentration in Air	chemical-specific	mg/m <sup>3</sup>	CS x (1/PEF + 1/VF)	$\text{ADE}_{\text{CA}} \text{ (\mu g/m}^3\text{)} = \frac{\text{CA} \times \text{CFa} \times \text{EF} \times \text{ED} \times \text{ET} \times \text{CFt} \times \text{CFA}}{\text{AT}_C}$
				EF	Exposure Frequency	250	days/year	USEPA, 2002 (3)	
				ED	Exposure Duration	25	years	USEPA, 2004 (4)	
				ET	Exposure Time	8	hrs/day	USEPA, 1991 (10)	
				CFt	Conversion Factor - time	1/24	day/hrs	--	
				CFa	Conversion Factor - air	1.0E+03	μg/mg	--	
				VF	Volatilization Factor	chemical-specific	m <sup>3</sup> /kg	--	
				PEF	Particulate Emission Factor	6.75E+08	m <sup>3</sup> /kg	USEPA, 1996 (11)	
				AT <sub>C</sub>	Averaging Time - Cancer	25,550	days	USEPA, 1989 (6)	
				AT <sub>NC</sub>	Averaging Time - Non-Cancer	9.125	days	USEPA, 1989 (7)	

**Notes:**

- (1) Soil ingestion rate - outdoor worker
- (2) Assumes 100% of daily soil ingestion occurs at the site
- (3) Default exposure frequency - indoor worker
- (4) Default RME exposure duration - indoor/outdoor worker
- (5) Default adult body weight
- (6) 70-year lifetime x 365 days/year
- (7) ED (years) x 365 days/year
- (8) Default outdoor worker value; based on median surface area occupied by 1/3 of the head, forearms, and hands for the average male and female adult.
- (9) Default value for outdoor workers
- (10) Assumes 5-day, 40-hour work week
- (11) Site-specific Particulate Emission Factor based on a 30-acre site in Philadelphia, Pennsylvania (Q/C value = 46.59 g/m<sup>2</sup>-s per kg/m<sup>3</sup>)

**Sources:**

BPJ - best professional judgment.

USEPA, 1989. Risk Assessment Guidance for Superfund - Volume 1 Human Health Evaluation Manual (Part A). EPA/540/1-89/002.

USEPA, 1991. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual, Supplemental Guidance: Standad Default Exposure Factors. Interim Final. Office of Emergency and Remedial Response. OSWER Directive 9285.6-03.

USEPA, 1996. Soil Screening Guidance: Technical Background Document. Office of Solid Waste and Emergency Response, Washington, DC. EPA/540/R-95/128.

USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Emergency and Remedial Response. OSWER 9355.4-24. December.

USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R/99/005. July.

**TABLE 4.1a.CTE**  
**VALUES USED FOR DAILY INTAKE CALCULATIONS - CTE**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Timeframe:</b> Future
<b>Medium:</b> Surface Soil (0 to 2 ft bgs)
<b>Exposure Medium:</b> Surface Soil (0 to 2 ft bgs)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Average Daily Dose (ADD)/ Average Daily Exposure (ADE)
Ingestion	Commercial/ Industrial Worker	Adult	Surface Soil (0 to 2 ft bgs)	CS IR <sub>Soil</sub> FI EF ED CF BW AT <sub>C</sub> AT <sub>NC</sub>	Chemical Concentration in Soil Ingestion Rate - Soil Fraction from Site Exposure Frequency Exposure Duration Conversion Factor Body Weight Avg. Time - Cancer Avg. Time - Non-Cancer	chemical-specific 50 1 225 9 1.0E-06 70 25,550 3,285	mg/kg mg/day -- days/year years kg/mg kg days days	See Table 3.1 USEPA, 2002 (1) BPJ (2) USEPA, 2002 (3) USEPA, 2004 (4) -- USEPA, 1991 (5) USEPA, 1989 (6) USEPA, 1989 (7)	$\text{ADD}_{\text{ING}} \text{ (mg/kg-day)} = \frac{\text{CS} \times \text{IR-S} \times \text{FI} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$
Dermal	Commercial/ Industrial Worker	Adult	Surface Soil (0 to 2 ft bgs)	CS CF SA AF DAF EF ED BW AT <sub>C</sub> AT <sub>NC</sub>	Chemical Concentration in Soil Conversion Factor Skin Surface Area Soil-to-Skin Adherence Factor Dermal Absorption Factor Exposure Frequency Exposure Duration Body Weight Avg. Time - Cancer Avg. Time - Non-Cancer	chemical-specific 1.0E-06 3,300 0.2 chemical-specific 225 9 70 25,550 3,285	mg/kg kg/mg cm <sup>2</sup> mg/cm <sup>2</sup> unitless days/year years kg day day	See Table 3.1 -- USEPA, 2004 (8) USEPA, 2002 (9) -- USEPA, 2002 (3) USEPA, 2004 (4) USEPA, 1991 (5) USEPA, 1989 (6) USEPA, 1989 (7)	$\text{ADD}_{\text{DERM}} \text{ (mg/kg-day)} = \frac{\text{CS} \times \text{SA} \times \text{AF} \times \text{DAF} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$
Inhalation	Commercial/ Industrial Worker	Adult	Particulates/ Vapors in Outdoor Air	CA EF ED ET CFT CFA VF PEF AT <sub>C</sub> AT <sub>NC</sub>	Concentration in Air Exposure Frequency Exposure Duration Exposure Time Conversion Factor - time Conversion Factor - air Volatilization Factor Particulate Emission Factor Averaging Time - Cancer Averaging Time - Non-Cancer	chemical-specific 225 9 8 1/24 1.0E+03 chemical-specific 6.75E+08 25,550 2,409	mg/m <sup>3</sup> days/year years hrs/day day/hrs µg/mg m <sup>3</sup> /kg m <sup>3</sup> /kg days days	CS x (1/PEF + 1/VF) USEPA, 2002 (3) USEPA, 2004 (4) USEPA, 1991 (10) -- -- -- USEPA, 1996 (11) USEPA, 1989 (6) USEPA, 1989 (7)	$\text{ADE}_{\text{CA}} \text{ (\mu g/m}^3\text{)} = \frac{\text{CA} \times \text{CFa} \times \text{EF} \times \text{ED} \times \text{ET} \times \text{CFT} \times \text{CFA}}{\text{AT}_C}$  $\text{ADE}_{\text{NC}} \text{ (mg/m}^3\text{)} = \frac{\text{CA} \times \text{EF} \times \text{ED} \times \text{ET} \times \text{CFT}}{\text{AT}_N}$

**Notes:**

- (1) Soil ingestion rate - indoor worker
- (2) Assumes 100% of daily soil ingestion occurs at the site
- (3) Default exposure frequency - outdoor worker
- (4) Default RME exposure duration - indoor/outdoor worker
- (5) Default adult body weight
- (6) 70-year lifetime x 365 days/year
- (7) ED (years) x 365 days/year
- (8) Default outdoor worker value; based on median surface area occupied by 1/3 of the head, forearms, and hands for the average male and female adult.
- (9) Default value for outdoor workers
- (10) Assumes 5-day, 40-hour work week
- (11) Site-specific Particulate Emission Factor based on a 30-acre site in Philadelphia, Pennsylvania (Q/C value = 46.59 g/m<sup>2</sup>-s per kg/m<sup>3</sup>)

**Sources:**

- BPJ - best professional judgment.
- USEPA, 1989. Risk Assessment Guidance for Superfund - Volume 1 Human Health Evaluation Manual (Part A). EPA/540/1-89/002.
- USEPA, 1991. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Interim Final. Office of Emergency and Remedial Response. OSWER Directive 9285.6-03.
- USEPA, 1996. Soil Screening Guidance: Technical Background Document. Office of Solid Waste and Emergency Response, Washington, DC. EPA/540/R-95/128.
- USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Emergency and Remedial Response. OSWER 9355.4-24. December.
- USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R/99/005. July.

**TABLE 4.1b.RME**  
**VALUES USED FOR DAILY INTAKE CALCULATIONS - RME**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - GROUNDWATER**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Timeframe:</b> Future
<b>Medium:</b> Groundwater
<b>Exposure Medium:</b> Overburden Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Average Daily Dose (ADD)
Ingestion	Commercial/ Industrial Worker Worker	Adult	Overburden Groundwater	C <sub>GW</sub> CF <sub>W</sub> IR <sub>GW</sub> EF ED BW AT <sub>C</sub> AT <sub>NC</sub>	Chemical Concentration in Groundwater Conversion Factor Ingestion Rate - Groundwater Exposure Frequency Exposure Duration Body Weight Avg. Time - Cancer Averaging Time - Non-Cancer	chemical-specific 1.0E-03 1 250 25 70 25,550 9,125	µg/L mg/µg L/day days/year years kg days days	See Table 3.3 -- USEPA, 1991 (1) USEPA, 2002 (2) USEPA, 2004 (3) USEPA, 1991 (4) USEPA, 1989 (5) USEPA, 1989 (6)	ADD <sub>ING-GW</sub> (mg/kg-day) = $\frac{C_{GW} \times IR_W \times EF \times ED \times CF_W}{BW \times AT}$

**Notes:**

- (1) Default commercial/industrial groundwater ingestion rate
- (2) Default exposure frequency - indoor worker
- (3) Default exposure duration - indoor/outdoor worker
- (4) Default adult body weight
- (5) 70-year lifetime x 365 days/year
- (6) ED (years) x 365 days/year

**Sources:**

- USEPA, 1989. Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A). EPA/540/1-89/002.
- USEPA, 1991. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Interim Final. Office of Emergency and Remedial Response. OSWER Directive 9285.6-03.
- USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Emergency and Remedial Response. OSWER 9355.4-24. December.
- USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R/99/005. July.

**TABLE 4.1b.CTE**  
**VALUES USED FOR DAILY INTAKE CALCULATIONS - CTE**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - GROUNDWATER**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Timeframe:</b> Future
<b>Medium:</b> Groundwater
<b>Exposure Medium:</b> Overburden Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Average Daily Dose (ADD)
Ingestion	Commercial/ Industrial Worker Worker	Adult	Overburden Groundwater	C <sub>GW</sub> CF <sub>2</sub> IR <sub>GW</sub> EF ED BW AT <sub>C</sub> AT <sub>NC</sub>	Chemical Concentration in Groundwater Conversion Factor Ingestion Rate - Groundwater Exposure Frequency Exposure Duration Body Weight Avg. Time - Cancer Averaging Time - Non-Cancer	chemical-specific 1.0E-03 1 225 9 70 25,550 3,285	µg/L mg/µg L/day days/year years kg days days	See Table 3.3 -- USEPA, 1991 (1) USEPA, 2002 (2) USEPA, 2004 (3) USEPA, 1991 (4) USEPA, 1989 (5) USEPA, 1989 (6)	ADD <sub>ING-GW</sub> (mg/kg-day) = $\frac{C_{GW} \times IR-W \times EF \times ED \times CF_2}{BW \times AT}$

**Notes:**

- (1) Default commercial/industrial groundwater ingestion rate
- (2) Default exposure frequency - indoor worker
- (3) Default exposure duration - indoor/outdoor worker
- (4) Default adult body weight
- (5) 70-year lifetime x 365 days/year
- (6) ED (years) x 365 days/year

**Sources:**

- USEPA, 1989. Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A). EPA/540/1-89/002.
- USEPA, 1991. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Interim Final. Office of Emergency and Remedial Response. OSWER Directive 9285.6-03.
- USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Emergency and Remedial Response. OSWER 9355.4-24. December.
- USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R/99/005. July.

**TABLE 4.2.RME**  
**VALUES USED FOR DAILY INTAKE CALCULATIONS - RME**  
**FUTURE SITE-SPECIFIC WORKER - SURFACE SOIL**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Timeframe:</b> Future
<b>Medium:</b> Surface Soil (0 to 2 ft bgs)
<b>Exposure Medium:</b> Surface Soil (0 to 2 ft bgs)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Average Daily Dose (ADD)/ Average Daily Exposure (ADE)
Ingestion	Site-Specific Worker	Adult	Surface Soil (0 to 2 ft bgs)	CS	Chemical Concentration in Soil	chemical-specific	mg/kg	See Table 3.1	$\text{ADD}_{\text{ING}} \text{ (mg/kg-day)} = \frac{\text{CS} \times \text{IR-S} \times \text{FI} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$
				IR <sub>Soil</sub>	Ingestion Rate - Soil	100	mg/day	USEPA, 2002 (1)	
				FI	Fraction from Site	1	--	BPJ (2)	
				EF	Exposure Frequency	100	days/year	BPJ (3)	
				ED	Exposure Duration	25	years	USEPA, 2004 (4)	
				CF	Conversion Factor	1.0E-06	kg/mg	--	
				BW	Body Weight	70	kg	USEPA, 1991 (5)	
				AT <sub>C</sub>	Avg. Time - Cancer	25,550	days	USEPA, 1989 (6)	
				AT <sub>NC</sub>	Avg. Time - Non-Cancer	9,125	days	USEPA, 1989 (7)	
Dermal	Site-Specific Worker	Adult	Surface Soil (0 to 2 ft bgs)	CS	Chemical Concentration in Soil	chemical-specific	mg/kg	See Table 3.1	$\text{ADD}_{\text{DERM}} \text{ (mg/kg-day)} = \frac{\text{CS} \times \text{SA} \times \text{AF} \times \text{DAF} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$
				CF	Conversion Factor	1.0E-06	kg/mg	--	
				SA	Skin Surface Area	3,300	cm <sup>2</sup>	USEPA, 2004 (8)	
				AF	Soil-to-Skin Adherence Factor	0.2	mg/cm <sup>2</sup>	USEPA, 2002 (9)	
				DAF	Dermal Absorption Factor	chemical-specific	unitless	--	
				EF	Exposure Frequency	100	days/year	BPJ (3)	
				ED	Exposure Duration	25	years	USEPA, 2004 (4)	
				BW	Body Weight	70	kg	USEPA, 1991 (5)	
				AT <sub>C</sub>	Avg. Time - Cancer	25,550	day	USEPA, 1989 (6)	
				AT <sub>NC</sub>	Avg. Time - Non-Cancer	9,125	day	USEPA, 1989 (7)	
Inhalation	Site-Specific Worker	Adult	Particulates/ Vapors in Outdoor Air	CA	Concentration in Air	chemical-specific	mg/m <sup>3</sup>	CS x (1/PEF + 1/VF)	$\text{ADE}_{\text{CA}} \text{ (\mu g/m}^3\text{)} = \frac{\text{CA} \times \text{CFa} \times \text{EF} \times \text{ED} \times \text{ET} \times \text{CFt} \times \text{CFA}}{\text{AT}_C}$
				EF	Exposure Frequency	100	days/year	BPJ (3)	
				ED	Exposure Duration	25	years	USEPA, 2004 (4)	
				ET	Exposure Time	8	hrs/day	BPJ (10)	
				CFt	Conversion Factor - time	1/24	day/hrs	--	
				CFa	Conversion Factor - air	1.0E+03	μg/mg	--	
				VF	Volatilization Factor	chemical-specific	m <sup>3</sup> /kg	--	
				PEF	Particulate Emission Factor	6.75E+08	m <sup>3</sup> /kg	USEPA, 1996 (11)	
				AT <sub>C</sub>	Averaging Time - Cancer	25,550	days	USEPA, 1989 (6)	
				AT <sub>NC</sub>	Averaging Time - Non-Cancer	9,125	days	USEPA, 1989 (7)	

**Notes:**

- (1) Default soil ingestion rate - outdoor worker
- (2) Assumes 100% of daily soil ingestion occurs at the site
- (3) Assumes 2 days per week for 50 weeks
- (4) Default RME exposure duration - indoor/outdoor worker
- (5) Default adult body weight
- (6) 70-year lifetime x 365 days/year
- (7) ED (years) x 365 days/year
- (8) Default outdoor worker value; based on median surface area occupied by 1/3 of the head, forearms, and hands for the average male and female adult.
- (9) Default value for outdoor workers
- (10) Assumes 5-day, 40-hour work week
- (11) Site-specific Particulate Emission Factor based on a 30-acre site in Philadelphia, Pennsylvania (Q/C value = 46.59 g/m<sup>2</sup>-s per kg/m<sup>3</sup>)

**Sources:**

BPJ - best professional judgment.

USEPA, 1989. Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A). EPA/540/1-89/002.

USEPA, 1991. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual, Supplemental Guidance: Standad Default Exposure Factors. Interim Final. Office of Emergency and Remedial Response. OSWER Directive 9285.6-03.

USEPA, 1996. Soil Screening Guidance: Technical Background Document. Office of Solid Waste and Emergency Response, Washington, DC. EPA/540/R-95/128.

USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Emergency and Remedial Response. OSWER 9355.4-24. December.

USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R/99/005. July.

**TABLE 4.2.CTE**  
**VALUES USED FOR DAILY INTAKE CALCULATIONS - CTE**  
**FUTURE SITE-SPECIFIC WORKER - SURFACE SOIL**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Timeframe:</b> Future
<b>Medium:</b> Surface Soil (0 to 2 ft bgs)
<b>Exposure Medium:</b> Surface Soil (0 to 2 ft bgs)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Average Daily Dose (ADD)/ Average Daily Exposure (ADE)
Ingestion	Site-Specific Worker	Adult	Surface Soil (0 to 2 ft bgs)	CS IR <sub>Soil</sub> FI EF ED CF BW AT <sub>C</sub> AT <sub>NC</sub>	Chemical Concentration in Soil Ingestion Rate - Soil Fraction from Site Exposure Frequency Exposure Duration Conversion Factor Body Weight Avg. Time - Cancer Avg. Time - Non-Cancer	chemical-specific 50 1 50 9 1.0E-06 70 25,550 3,285	mg/kg mg/day -- days/year years kg/mg kg days days	See Table 3.1 USEPA, 2002 (1) BPJ (2) BPJ (3) USEPA, 2004 (4) -- USEPA, 1991 (5) USEPA, 1989 (6) USEPA, 1989 (7)	ADD <sub>ING</sub> (mg/kg-day) = $\frac{CS \times IR-S \times FI \times EF \times ED \times CF}{BW \times AT}$
Dermal	Site-Specific Worker	Adult	Surface Soil (0 to 2 ft bgs)	CS CF SA AF DAF EF ED BW AT <sub>C</sub> AT <sub>NC</sub>	Chemical Concentration in Soil Conversion Factor Skin Surface Area Soil-to-Skin Adherence Factor Dermal Absorption Factor Exposure Frequency Exposure Duration Body Weight Avg. Time - Cancer Avg. Time - Non-Cancer	chemical-specific 1.0E-06 3,300 0.2 chemical-specific 50 9 70 25,550 3,285	mg/kg kg/mg cm <sup>2</sup> mg/cm <sup>2</sup> unitless days/year years kg day day	See Table 3.1 -- USEPA, 2004 (8) USEPA, 2002 (9) -- BPJ (3) USEPA, 2004 (4) USEPA, 1991 (5) USEPA, 1989 (6) USEPA, 1989 (7)	ADD <sub>DERM</sub> (mg/kg-day) = $\frac{CS \times SA \times AF \times DAF \times EF \times ED \times CF}{BW \times AT}$
Inhalation	Site-Specific Worker	Adult	Particulates/ Vapors in Outdoor Air	CA EF ED ET CFt CFa VF PEF AT <sub>C</sub> AT <sub>NC</sub>	Concentration in Air Exposure Frequency Exposure Duration Exposure Time Conversion Factor - time Conversion Factor - air Volatilization Factor Particulate Emission Factor Averaging Time - Cancer Averaging Time - Non-Cancer	chemical-specific 50 9 8 1/24 1.0E+03 chemical-specific 6.75E+08 25,550 3,285	mg/m <sup>3</sup> days/year years hrs/day day/hrs µg/mg m <sup>3</sup> /kg m <sup>3</sup> /kg days days	CS x (1/PEF + 1/VF) BPJ (3) USEPA, 2004 (4) BPJ (10) -- -- USEPA, 1996 (11) USEPA, 1989 (6) USEPA, 1989 (7)	ADE <sub>CA</sub> (µg/m <sup>3</sup> ) = $\frac{CA \times CFa \times EF \times ED \times ET \times CFt \times CFa}{AT_C}$  ADE <sub>NC</sub> (mg/m <sup>3</sup> ) = $\frac{CA \times EF \times ED \times ET \times CFt}{AT_{NC}}$

**Notes:**

- (1) Soil ingestion rate - indoor worker
- (2) Assumes 100% of daily soil ingestion occurs at the site
- (3) Assumes 1 day per week for 50 weeks
- (4) Median occupational tenure for men and women 16 years and older when age is unknown
- (5) Default adult body weight
- (6) 70-year lifetime x 365 days/year
- (7) ED (years) x 365 days/year
- (8) Default outdoor worker value; based on median surface area occupied by 1/3 of the head, forearms, and hands for the average male and female adult.
- (9) Default value for outdoor workers
- (10) Assumes 5-day, 40-hour work week
- (11) Site-specific Particulate Emission Factor based on a 30-acre site in Philadelphia, Pennsylvania (Q/C value = 46.59 g/m<sup>2</sup>-s per kg/m<sup>3</sup>)

**Sources:**

- BPJ - best professional judgment.
- USEPA, 1989. Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A). EPA/540/1-89/002.
- USEPA, 1991. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Interim Final. Office of Emergency and Remedial Response. OSWER Directive 9285.6-03.
- USEPA, 1996. Soil Screening Guidance: Technical Background Document. Office of Solid Waste and Emergency Response, Washington, DC. EPA/540/R-95/128.
- USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Emergency and Remedial Response. OSWER 9355.4-24. December.
- USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R/99/005. July.

**TABLE 4.3a.RME**  
**VALUES USED FOR DAILY INTAKE CALCULATIONS - RME**  
**FUTURE CONSTRUCTION WORKER - MIXED SOIL**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Timeframe:</b> Future
<b>Medium:</b> Mixed Soil (0 to 10 ft bgs)
<b>Exposure Medium:</b> Mixed Soil (0 to 10 ft bgs)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Average Daily Dose (ADD)/ Average Daily Exposure (ADE)
Ingestion	Construction Worker	Adult	Mixed Soil (0 to 10 ft bgs)	CS IR <sub>Soil</sub> FI EF ED CF BW AT <sub>C</sub> AT <sub>NC</sub>	Chemical Concentration in Soil Ingestion Rate - Soil Fraction from Site Exposure Frequency Exposure Duration Conversion Factor Body Weight Avg. Time - Cancer Avg. Time - Non-Cancer	chemical-specific 330 1 130 1 1.0E-06 70 25,550 365	mg/kg mg/day -- days/year years kg/mg kg days days	See Table 3.2 USEPA, 2002 (1) BPJ (2) BPJ (3) BPJ (4) -- USEPA, 1991 (5) USEPA, 1989 (6) USEPA, 1989 (7)	ADD <sub>ING</sub> (mg/kg-day) = $\frac{CS \times IR-S \times FI \times EF \times ED \times CF}{BW \times AT}$
Dermal	Construction Worker	Adult	Mixed Soil (0 to 10 ft bgs)	CS CF SA AF DAF EF ED BW AT <sub>C</sub> AT <sub>NC</sub>	Chemical Concentration in Soil Conversion Factor Skin Surface Area Soil-to-Skin Adherence Factor Dermal Absorption Factor Exposure Frequency Exposure Duration Body Weight Avg. Time - Cancer Avg. Time - Non-Cancer	chemical-specific 1.0E-06 3,300 0.3 chemical-specific 130 1 70 25,550 365	mg/kg kg/mg cm <sup>2</sup> mg/cm <sup>2</sup> unitless days/year years kg day day	See Table 3.2 -- USEPA, 2002 (8) USEPA, 2002 (9) -- BPJ (3) BPJ (4) USEPA, 1991 (5) USEPA, 1989 (6) USEPA, 1989 (7)	ADD <sub>DERM</sub> (mg/kg-day) = $\frac{CS \times SA \times AF \times DAF \times EF \times ED \times CF}{BW \times AT}$
Inhalation	Construction Worker	Adult	Particulates/ Vapors in Outdoor Air	CA EF ED ET CFt CFa VF PEF AT <sub>C</sub> AT <sub>NC</sub>	Concentration in Air Exposure Frequency Exposure Duration Exposure Time Conversion Factor - time Conversion Factor - air Volatilization Factor Particulate Emission Factor Averaging Time - Cancer Averaging Time - Non-Cancer	chemical-specific 130 1 8 1/24 1,000 chemical-specific 6.75E+08 25,550 365	mg/m <sup>3</sup> days/year years hrs/day day/hrs µg/mg m <sup>3</sup> /kg m <sup>3</sup> /kg days days	CS x (1/PEF + 1/VF) BPJ (3) BPJ (4) USEPA, 1991 (10) -- -- USEPA, 1996 (11) USEPA, 1989 (6) USEPA, 1989 (7)	ADE <sub>CA</sub> (µg/m <sup>3</sup> ) = $\frac{CA \times CFa \times EF \times ED \times ET \times CFt \times CFa}{AT_C}$  ADE <sub>NC</sub> (mg/m <sup>3</sup> ) = $\frac{CA \times EF \times ED \times ET \times CFt}{AT_{NC}}$

**Notes:**

- (1) Default soil ingestion rate - construction worker
- (2) Assumes 100% of daily soil ingestion occurs at the site
- (3) Assumes 6 worker-months per year
- (4) Construction activities are expected to be of relatively short duration - assumes 1 year
- (5) Default adult body weight
- (6) 70-year lifetime x 365 days/year
- (7) ED (years) x 365 days/year
- (8) Default outdoor worker value; based on median surface area occupied by 1/3 of the head, forearms, and hands for the average male and female adult.
- (9) 95th percentile weighted soil adherence factor for construction workers
- (10) Assumes 5-day, 40-hour work week
- (11) Site-specific Particulate Emission Factor based on a 30-acre site in Philadelphia, Pennsylvania (Q/C value = 46.59 g/m<sup>2</sup>-s per kg/m<sup>3</sup>)

**Sources:**

BPJ - best professional judgment.

USEPA, 1989. Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A). EPA/540/I-89/002.

USEPA, 1991. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Interim Final. Office of Emergency and Remedial Response. OSWER Directive 9285.6-03.

USEPA, 1996. Soil Screening Guidance: Technical Background Document. Office of Solid Waste and Emergency Response, Washington, DC. EPA/540/R-95/128.

USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Emergency and Remedial Response. OSWER 9355.4-24. December.

USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R/99/005. July.

**TABLE 4.3a.CTE**  
**VALUES USED FOR DAILY INTAKE CALCULATIONS - CTE**  
**FUTURE CONSTRUCTION WORKER - MIXED SOIL**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Timeframe:</b> Future
<b>Medium:</b> Mixed Soil (0 to 10 ft bgs)
<b>Exposure Medium:</b> Mixed Soil (0 to 10 ft bgs)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Average Daily Dose (ADD)/ Average Daily Exposure (ADE)
Ingestion	Construction Worker	Adult	Mixed Soil (0 to 10 ft bgs)	CS IR <sub>Soil</sub> FI EF ED CF BW AT <sub>C</sub> AT <sub>NC</sub>	Chemical Concentration in Soil Ingestion Rate - Soil Fraction from Site Exposure Frequency Exposure Duration Conversion Factor Body Weight Avg. Time - Cancer Avg. Time - Non-Cancer	chemical-specific 330 1 65 1 1.0E-06 70 25,550 365	mg/kg mg/day -- days/year years kg/mg kg days days	See Table 3.2 USEPA, 2002 (1) BPJ (2) BPJ (3) BPJ (4) -- USEPA, 1991 (5) USEPA, 1989 (6) USEPA, 1989 (7)	ADD <sub>ING</sub> (mg/kg-day) = $\frac{CS \times IR-S \times FI \times EF \times ED \times CF}{BW \times AT}$
Dermal	Construction Worker	Adult	Mixed Soil (0 to 10 ft bgs)	CS CF SA AF DA EF ED BW AT <sub>C</sub> AT <sub>NC</sub>	Chemical Concentration in Soil Conversion Factor Skin Surface Area Soil-to-Skin Adherence Factor Dermal Absorption Factor Exposure Frequency Exposure Duration Body Weight Avg. Time - Cancer Avg. Time - Non-Cancer	chemical-specific 1.0E-06 3,300 0.3 chemical-specific 65 1 70 25,550 365	mg/kg kg/mg cm <sup>2</sup> mg/cm <sup>2</sup> unitless days/year years kg day day	See Table 3.2 -- USEPA, 2002 (8) USEPA, 2002 (9) -- BPJ (3) BPJ (4) USEPA, 1991 (5) USEPA, 1989 (6) USEPA, 1989 (7)	ADD <sub>DERM</sub> (mg/kg-day) = $\frac{CS \times SA \times AF \times DA \times EF \times ED \times CF}{BW \times AT}$
Inhalation	Construction Worker	Adult	Particulates/ Vapors in Outdoor Air	CA EF ED ET CFt CFa VF PEF AT <sub>C</sub> AT <sub>NC</sub>	Concentration in Air Exposure Frequency Exposure Duration Exposure Time Conversion Factor - time Conversion Factor - air Volatilization Factor Particulate Emission Factor Averaging Time - Cancer Averaging Time - Non-Cancer	chemical-specific 65 1 8 1/24 1.0E+03 chemical-specific 6.75E+08 25,550 365	mg/m <sup>3</sup> days/year years hrs/day day/hrs µg/mg m <sup>3</sup> /kg m <sup>3</sup> /kg days days	CS x (1/PEF + 1/VF) BPJ (3) BPJ (4) USEPA, 1991 (10) -- -- USEPA, 1996 (11) USEPA, 1989 (6) USEPA, 1989 (7)	ADE <sub>CA</sub> (µg/m <sup>3</sup> ) = $\frac{CA \times CFa \times EF \times ED \times ET \times CFt \times CFa}{AT_C}$  ADE <sub>NC</sub> (mg/m <sup>3</sup> ) = $\frac{CA \times EF \times ED \times ET \times CFt}{AT_{NC}}$

**Notes:**

- (1) Default soil ingestion rate - construction worker
- (2) Assumes 100% of daily soil ingestion occurs at the site
- (3) Assumes 3 worker-months per year
- (4) Construction activities are expected to be of relatively short duration - assumes 1 year
- (5) Default adult body weight
- (6) 70-year lifetime x 365 days/year
- (7) ED (years) x 365 days/year
- (8) Default outdoor worker value; based on median surface area occupied by 1/3 of the head, forearms, and hands for the average male and female adult.
- (9) 95th percentile weighted soil adherence factor for construction workers
- (10) Assumes 5-day, 40-hour work week
- (11) Site-specific Particulate Emission Factor based on a 30-acre site in Philadelphia, Pennsylvania (Q/C value = 46.59 g/m<sup>2</sup>-s per kg/m<sup>3</sup>)

**Sources:**

BPJ - best professional judgment.

USEPA, 1989. Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A). EPA/540/I-89/002.

USEPA, 1991. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Interim Final. Office of Emergency and Remedial Response. OSWER Directive 9285.6-03.

USEPA, 1996. Soil Screening Guidance: Technical Background Document. Office of Solid Waste and Emergency Response, Washington, DC. EPA/540/R-95/128.

USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Emergency and Remedial Response. OSWER 9355.4-24. December.

USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R/99/005. July.

**TABLE 4.3b.RME**  
**VALUES USED FOR DAILY INTAKE CALCULATIONS - RME**  
**FUTURE CONSTRUCTION WORKER - SHALLOW (OVERBURDEN) GROUNDWATER**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Timeframe:</b> Future
<b>Medium:</b> Groundwater
<b>Exposure Medium:</b> Shallow (Overburden) Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Average Daily Dose (ADD)
Dermal	Construction Worker	Adult	Shallow (Overburden) Groundwater at the Water Table	C <sub>GW</sub> SA K <sub>p</sub> EF ED ET CF <sub>w</sub> CF <sub>v</sub> BW AT <sub>c</sub> AT <sub>NC</sub>	Chemical Concentration in Groundwater Skin Surface Area Permeability Constant Exposure Frequency Exposure Duration Exposure Time Conversion Factor Conversion Factor Body Weight Avg. Time - Cancer Averaging Time - Non-Cancer	chemical-specific 3,300 chemical-specific 130 1 8 1.0E-03 1.0E-03 70 25,550 365	µg/L cm <sup>2</sup> cm/hour days/year years hours/day mg/ug L/cm <sup>3</sup> kg day days	See Table 3.3 USEPA, 2002 (1) -- BPJ (2) BPJ (3) USEPA, 1991 (4) -- -- USEPA, 1991 (5) USEPA, 1989 (6) USEPA, 1989 (7)	ADD <sub>DERM</sub> (mg/kg-day) = $\frac{C_{GW} \times SA \times K_p \times EF \times ED \times ET \times CF_w \times CF_v}{BW \times AT}$  ADD <sub>DERM</sub> (mg/kg-day) = $\frac{C_{GW} \times SA \times K_p \times EF \times ED \times ET \times CF_w \times CF_v}{BW \times AT}$

**Notes:**

- (1) Default outdoor worker value; based on median surface area occupied by 1/3 of the head, forearms, and hands for the average male and female adult.
- (2) Assumes 6 worker-months per year
- (3) Construction activities are expected to be of relatively short duration - assumes 1 year
- (4) Assumes 5-day, 40-hour work week
- (5) Default adult body weight
- (6) 70-year lifetime x 365 days/year
- (7) ED (years) x 365 days/year

**Sources:**

BPJ - best professional judgment.

USEPA, 1989. Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A). EPA/540/1-89/002.

USEPA, 1991. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Interim Final. Office of Emergency and Remedial Response. OSWER Directive 9285.6-03.

USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Emergency and Remedial Response. OSWER 9355.4-24. December.

**TABLE 4.3b.CTE**  
**VALUES USED FOR DAILY INTAKE CALCULATIONS - CTE**  
**FUTURE CONSTRUCTION WORKER - SHALLOW (OVERBURDEN) GROUNDWATER**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Timeframe:</b> Future
<b>Medium:</b> Groundwater
<b>Exposure Medium:</b> Shallow (Overburden) Groundwater

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Average Daily Dose (ADD)
Dermal	Construction Worker	Adult	Shallow (Overburden) Groundwater at the Water Table	C <sub>GW</sub> SA K <sub>p</sub> EF ED ET CF <sub>2</sub> CF <sub>3</sub> BW AT <sub>C</sub> AT <sub>NC</sub>	Chemical Concentration in Groundwater Skin Surface Area Permeability Constant Exposure Frequency Exposure Duration Exposure Time Conversion Factor Conversion Factor Body Weight Avg. Time - Cancer Averaging Time - Non-Cancer	chemical-specific 3,300 chemical-specific 65 1 8 1.0E-03 1.0E-03 70 25,550 365	µg/L cm <sup>2</sup> cm/hour days/year years hours/day mg/µg L/cm <sup>3</sup> kg day days	See Table 3.3 USEPA, 2002 (1) -- BPJ (2) BPJ (3) USEPA, 1991 (4) -- -- USEPA, 1991 (5) USEPA, 1989 (6) USEPA, 1989 (7)	ADD <sub>DERM</sub> (mg/kg-day) = $\frac{C_{GW} \times SA \times K_p \times EF \times ED \times ET \times CF_w \times CF_v}{BW \times AT}$

**Notes:**

- (1) Default outdoor worker value; based on median surface area occupied by 1/3 of the head, forearms, and hands for the average male and female adult.
- (2) Assumes 3 worker-months per year
- (3) Construction activities are expected to be of relatively short duration - assumes 1 year
- (4) Assumes 5-day, 40-hour work week
- (5) Default adult body weight
- (6) 70-year lifetime x 365 days/year
- (7) ED (years) x 365 days/year

**Sources:**

BPJ - best professional judgment.

USEPA, 1989. Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A). EPA/540/1-89/002.

USEPA, 1991. Risk Assessment Guidance for Superfund. Volume I: Human Health Evaluation Manual, Supplemental Guidance: Standard Default Exposure Factors. Interim Final. Office of Emergency and Remedial Response. OSWER Directive 9285.6-03.

USEPA, 2002. Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites. Office of Emergency and Remedial Response. OSWER 9355.4-24. December.

**TABLE 4.4.RME**  
**VALUES USED FOR DAILY INTAKE CALCULATIONS - RME**  
**CURRENT/FUTURE TRESPASSER - SEDIMENT/BANK SOIL**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Scenario Timeframe:</b> Current/Future
<b>Medium:</b> Surficial Sediment/ Bank Soil (0 to 0.5 ft bgs)
<b>Exposure Medium:</b> Surficial Sediment/Bank Soil (0 to 0.5 ft bgs)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Average Daily Dose (ADD)
Ingestion	Trespasser	Adolescent Ages 7-16	Surficial Sediment/ Bank Soil (0 to 0.5 ft bgs) in/along SBC	CS	Chemical Concentration in Soil	chemical-specific	mg/kg	See Table 3.4	$\text{ADD}_{\text{ING}} \text{ (mg/kg-day)} = \frac{\text{CS} \times \text{IR-S} \times \text{FI} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$
				IR <sub>Sed</sub>	Ingestion Rate - Sediment	100	mg/day	USEPA, 1997 (1)	
				FI	Fraction from Site	1	--	BPJ (2)	
				EF	Exposure Frequency	32	days/year	BPJ (3)	
				ED	Exposure Duration	10	years	BPJ (4)	
				CF	Conversion Factor	1.0E-06	kg/mg	--	
				BW	Body Weight	43	kg	USEPA, 1997 (5)	
				AT <sub>C</sub>	Avg. Time - Cancer	25,550	days	USEPA, 1989 (6)	
				AT <sub>NC</sub>	Avg. Time - Non-Cancer	3,650	days	USEPA, 1989 (7)	
Dermal	Trespasser	Adolescent Ages 7-16	Surficial Sediment/ Bank Soil (0 to 0.5 ft bgs) in/along SBC	CS	Chemical Concentration in Soil	chemical-specific	mg/kg	See Table 3.4	$\text{ADD}_{\text{DERM}} \text{ (mg/kg-day)} = \frac{\text{CS} \times \text{SA} \times \text{AF} \times \text{DA} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$
				CF	Conversion Factor	1.0E-06	kg/mg	--	
				SA	Skin Surface Area	4,100	cm <sup>2</sup>	USEPA, 1997 (8)	
				AF	Soil-to-Skin Adherence Factor	0.3	mg/cm <sup>2</sup>	USEPA, 2004 (9)	
				DA	Dermal Absorption Factor	chemical-specific	unitless	--	
				EF	Exposure Frequency	32	days/year	BPJ (3)	
				ED	Exposure Duration	10	years	BPJ (4)	
				BW	Body Weight	43	kg	USEPA, 1997 (5)	
				AT <sub>C</sub>	Avg. Time - Cancer	25,550	day	USEPA, 1989 (6)	
				AT <sub>NC</sub>	Avg. Time - Non-Cancer	3,650	day	USEPA, 1989 (7)	

**Notes:**

- (1) Mean soil ingestion rate for children; sediment ingestion rates could not be identified
- (2) Assumes 100% of daily sediment ingestion occurs at the site
- (3) Assumes 1 day per week during the non-winter months (March-October)
- (4) Assumes an adolescent will visit the site for a period of 10 years (ages 7 to 16)
- (5) Average body weight, males and females, ages 7 to 16
- (6) 70-year lifetime x 365 days/year
- (7) ED (years) x 365 days/year
- (8) Median surface area occupied by 1/3 of the head, lower legs, forearms, and the hands for average males and females ages 7 to 16
- (9) Median weighted soil adherence factor for reed gatherers

**Sources:**

BPJ - best professional judgment.

USEPA, 1989. Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A). EPA/540/1-89/002.

USEPA, 1997. Volume 1- General Factors, Exposure Factors Handbook, and Volume 3 - Activity Factors. EPA/600/P-95/002Fa.

USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R/99/005. July.

**TABLE 4.4.CTE**  
**VALUES USED FOR DAILY INTAKE CALCULATIONS - CTE**  
**CURRENT/FUTURE TRESPASSER - SEDIMENT/BANK SOIL**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Scenario Timeframe:</b> Current/Future
<b>Medium:</b> Surficial Sediment/ Bank Soil (0 to 0.5 ft bgs)
<b>Exposure Medium:</b> Surficial Sediment/Bank Soil (0 to 0.5 ft bgs)

Exposure Route	Receptor Population	Receptor Age	Exposure Point	Parameter Code	Parameter Definition	Value	Units	Rationale/ Reference	Average Daily Dose (ADD)
Ingestion	Trespasser	Adolescent Ages 7-16	Surficial Sediment/ Bank Soil (0 to 0.5 ft bgs) in/along SBC	CS	Chemical Concentration in Soil	chemical-specific	mg/kg	See Table 3.4	$\text{ADD}_{\text{ING}} \text{ (mg/kg-day)} = \frac{\text{CS} \times \text{IR-S} \times \text{FI} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$
				IR <sub>Sed</sub>	Ingestion Rate - Sediment	50	mg/day	USEPA, 1997 (1)	
				FI	Fraction from Site	1	--	BPJ (2)	
				EF	Exposure Frequency	12	days/year	BPJ (3)	
				ED	Exposure Duration	10	years	BPJ (4)	
				CF	Conversion Factor	1.0E-06	kg/mg	--	
				BW	Body Weight	43	kg	USEPA, 1997 (5)	
				AT <sub>C</sub>	Avg. Time - Cancer	25,550	days	USEPA, 1989 (6)	
				AT <sub>NC</sub>	Avg. Time - Non-Cancer	3,650	days	USEPA, 1989 (7)	
Dermal	Trespasser	Adolescent Ages 7-16	Surficial Sediment/ Bank Soil (0 to 0.5 ft bgs) in/along SBC	CS	Chemical Concentration in Soil	chemical-specific	mg/kg	See Table 3.4	$\text{ADD}_{\text{DERM}} \text{ (mg/kg-day)} = \frac{\text{CS} \times \text{SA} \times \text{AF} \times \text{DA} \times \text{EF} \times \text{ED} \times \text{CF}}{\text{BW} \times \text{AT}}$
				CF	Conversion Factor	1.0E-06	kg/mg	--	
				SA	Skin Surface Area	4,100	cm <sup>2</sup>	USEPA, 1997 (8)	
				AF	Soil-to-Skin Adherence Factor	0.3	mg/cm <sup>2</sup>	USEPA, 2004 (9)	
				DA	Dermal Absorption Factor	chemical-specific	unitless	--	
				EF	Exposure Frequency	12	days/year	BPJ (3)	
				ED	Exposure Duration	10	years	BPJ (4)	
				BW	Body Weight	43	kg	USEPA, 1997 (5)	
				AT <sub>C</sub>	Avg. Time - Cancer	25,550	day	USEPA, 1989 (6)	
				AT <sub>NC</sub>	Avg. Time - Non-Cancer	3,650	day	USEPA, 1989 (7)	

**Notes:**

- (1) Mean soil ingestion rate for adults; sediment ingestion rates could not be identified
- (2) Assumes 100% of daily sediment ingestion occurs at the site
- (3) Assumes 1 day per week during the summer months (June-August)
- (4) Assumes an adolescent will visit the site for a period of 10 years (ages 7 to 16)
- (5) Average body weight, males and females, ages 7 to 16
- (6) 70-year lifetime x 365 days/year
- (7) ED (years) x 365 days/year
- (8) Median surface area occupied by 1/3 of the head, lower legs, forearms, and the hands for males and females ages 7 to 16
- (9) Median weighted soil adherence factor for reed gatherers

**Sources:**

BPJ - best professional judgment.

USEPA, 1989. Risk Assessment Guidance for Superfund - Volume I Human Health Evaluation Manual (Part A). EPA/540/1-89/002.

USEPA, 1997. Volume 1- General Factors, Exposure Factors Handbook, and Volume 3 - Activity Factors. EPA/600/P-95/002Fa.

USEPA, 2004. Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment). EPA/540/R/99/005. July.

**TABLE 5.1**  
**NON-CANCER TOXICITY DATA -- ORAL/DERMAL**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

**TABLE 5.1**  
**NON-CANCER TOXICITY DATA -- ORAL/DERMAL**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

COPC	CAS No.	Chronic/ Subchronic	RfDo <sup>(1)</sup>		GI Absorption <sup>(2)</sup> (unitless)	RfDd <sup>(2)</sup>		Dermal Absorption Factor <sup>(2)</sup>	Kp <sup>(3)</sup> (cm/hr)	Target Organ/ Critical Effect <sup>(4)</sup>	Combined UF/MF <sup>(5)</sup> (unitless)	RfDo	
			Value	Units		Value	Units					Source <sup>(1)</sup>	Date <sup>(6)</sup>
Vinyl Chloride	75-01-4	Chronic	3.0E-03	mg/kg-day	1	3.0E-03	mg/kg-day	--	8.38E-03	Liver	30	I	Nov 2011
Xylenes, Mixed	1330-20-7	Chronic	2.0E-01	mg/kg-day	1	2.0E-01	mg/kg-day	--	4.71E-02	Body Weight	1,000	I	Nov 2011

**Notes:**

(1) RfDo values obtained from USEPA Regional Screening Level (RSL) Tables for Chemical Contaminants at Superfund Sites (updated November 2010). The RSL Tables cite the following primary sources:

I = IRIS; USEPA's Integrated Risk Information System available at: <http://cfpub.epa.gov/ncea/iris/index.cfm>

P = PPRTV; the Provisional Peer Reviewed Toxicity Values derived for the USEPA Superfund program (not publicly available). P(X) indicates a withdrawn value.

A = ATSDR; the Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLS) available at: <http://www.atsdr.cdc.gov/mrls/>

C = California EPA toxicity values available at: <http://www.oehha.ca.gov/risk/ChemicalDB/index.asp>

H = HEAST; the USEPA Superfund program's Health Effects Summary Tables (not publicly available)

(2) Gastrointestinal absorption factors (GI<sub>ABS</sub>) and dermal absorption factors (DAF) obtained from USEPA RSL Tables (November 2010). RfDd values was calcluated as follows:

$$Rfd = RfDo \times GI_{Abs}$$

(3) Dermal permeability (Kp) coefficients obtained from RAGS Part E Exhibit 3-1 (Inorganics) and USEPA's EPI DermWIN v2.0 (organics).

(4) Primary target organ as reported in principal study.

(5) UF/MF reported by the USEPA IRIS database (accessed March 2011).

(6) Date of most recent RSL Tables.

(7) The following surrogate values were used for risk characterization:

- total PCBs uses Aroclor 1254 as a surrogate
- 1,3-dichlorobenzene uses 1,2-dichlorobenzene as a surrogate
- phenanthrene uses pyrene as a surrogate

(8) Concentrations of dioxins and furans are normalized to 2,3,7,8-TCDD using the World Health Organization (2005) toxicity equivalency factors.

(9) Concentrations of carcinogenic polycyclic aromatic hydrocarbons are normalized to benzo(a)pyrene using the toxicity equivalency factors obtained from the USEPA *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons* (July 1993).

**Definitions:**

RfDo = Oral Reference Dose

RfDd = Dermal Reference Dose

DAF = Dermal Absorption Fraction

Kp = Dermal Permeability Coefficient

UF = Uncertainty Factor

MF = Modifying Factor

NA = Not available

-- = Not applicable

**TABLE 5.2**  
**NON-CANCER TOXICITY DATA -- INHALATION**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

**TABLE 5.2**  
**NON-CANCER TOXICITY DATA -- INHALATION**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

COPC	CAS No.	Chronic/ Subchronic	RfC <sup>(1)</sup>		Target Organ/ Critical Effect <sup>(2)</sup>	VF <sup>(3)</sup> (m <sup>3</sup> /kg)	Combined UF/MF <sup>(4)</sup> (unitless)	RfC	
			Value	Units				Source <sup>(1)</sup>	Date <sup>(5)</sup>
Phenanthrene <sup>(8)</sup>	85-01-8	--	--	--	--	--	--	--	--
Trichlorobenzene, 1,2,4-	120-82-1	Chronic	2.0E-03	mg/m <sup>3</sup>	Adrenal	2.20E+04	--	P	Nov 2011
Benzene	71-43-2	Chronic	3.0E-02	mg/m <sup>3</sup>	Blood/Immuno	2.60E+03	300	I	Nov 2011
Chlorobenzene	108-90-7	Chronic	5.0E-02	mg/m <sup>3</sup>	Liver	4.73E+03	--	P	Nov 2011
Chloroform	67-66-3	Chronic	9.8E-02	mg/m <sup>3</sup>	Liver	1.93E+03	--	A	Nov 2011
Dichloroethane, 1,1-	75-34-3	--	--	--	--	--	--	--	--
Dichloroethane, 1,2-	107-06-2	Chronic	2.4E+00	mg/m <sup>3</sup>	Kidney	3.36E+03	--	A	Nov 2011
Ethylbenzene	100-41-4	Chronic	1.0E+00	mg/m <sup>3</sup>	Develop	4.16E+03	300	I	Nov 2011
Methylene Chloride	75-09-2	Chronic	1.0E+00	mg/m <sup>3</sup>	Liver	1.61E+03	--	A	Nov 2011
Tetrachloroethylene (PCE)	127-18-4	Chronic	2.7E-01	mg/m <sup>3</sup>	Liver	1.72E+03	--	A	Nov 2011
Trichloroethylene (TCE)	79-01-6	--	--	--	--	--	--	--	--
Vinyl Chloride	75-01-4	Chronic	1.0E-01	mg/m <sup>3</sup>	Liver	7.02E+02	30	I	Nov 2011
Xylenes, Mixed	1330-20-7	Chronic	1.0E-01	mg/m <sup>3</sup>	CNS	4.27E+03	300	I	Nov 2011

**Notes:**

(1) RfDo and values obtained from USEPA Regional Screening Level (RSL) Tables for Chemical Contaminants at Superfund Sites (updated November 2010). The RSL Tables cite the following primary sources:

I = IRIS; USEPA's Integrated Risk Information System available at: <http://cfpub.epa.gov/ncea/iris/index.cfm>

P = PPRTV; the Provisional Peer Reviewed Toxicity Values derived for the USEPA Superfund program (not publicly available). P(X) indicates a withdrawn value.

A = ATSDR; the Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs) available at: <http://www.atsdr.cdc.gov/mrls/>

C = California EPA toxicity values available at: <http://www.oehha.ca.gov/risk/ChemicalDB/index.asp>

H = HEAST; the USEPA Superfund program's Health Effects Summary Tables (not publicly available)

(2) Chemical-specific VFs were calculated using the default equation presented in the USEPA (1996) Soil Screening Guidance. Equations and inputs are presented in Attachment A.

(3) Primary target organ as reported in principal study.

(4) UF/MF reported by the USEPA IRIS database (accessed March 2011).

(5) Date of most recent RSL Tables.

(6) Concentrations of dioxins and furans are normalized to 2,3,7,8-TCDD using the World Health Organization (2005) toxicity equivalency factors.

(7) Concentrations of carcinogenic polycyclic aromatic hydrocarbons are normalized to benzo(a)pyrene using the toxicity equivalency factors obtained from the USEPA *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons* (July 1993).

(8) The following surrogate values were used for risk characterization:

- 1,3-dichlorobenzene uses 1,2-dichlorobenzene as a surrogate

- phenanthrene uses pyrene as a surrogate

**Definitions:**

RfC = Reference Concentration

VF = Volatilization Factor

-- = Not applicable

UF = Uncertainty Factor

MF = Modifying Factor

**TABLE 6.1**  
**CANCER TOXICITY DATA -- ORAL/DERMAL**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

COPC	CAS No.	SFo <sup>(1)</sup>		GI Absorption <sup>(2)</sup> (unitless)	SFd <sup>(2)</sup>		DAF <sup>(2)</sup> (unitless)	Kp <sup>(3)</sup> (cm/hr)	Cancer Class <sup>(4)</sup>	SFo					
		Value	Units		Value	Units				Source <sup>(1)</sup>	Date <sup>(5)</sup>				
Aluminum	7429-90-5	--	--	--	--	--	--	--	--	--	--				
Antimony	7440-36-0	--	--	--	--	--	--	--	--	--	--				
Arsenic	7440-38-2	1.5E+00	1/(mg/kg-day)	1	1.5E+00	1/(mg/kg-day)	0.03	1.00E-03	A	I	Nov 2011				
Barium	7440-39-3	--	--	--	--	--	--	--	D	--	--				
Beryllium	7440-41-7	--	--	--	--	--	--	--	D	--	--				
Cadmium	7440-43-9d	--	--	--	--	--	--	--	B1	--	--				
Cadmium (water)	7440-43-9w	--	--	--	--	--	--	--	B1	--	--				
Chromium, Hexavalent	18540-29-9	5.0E-01	1/(mg/kg-day)	0.025	2.0E+01	1/(mg/kg-day)	--	2.00E-03	D	J	Nov 2011				
Cobalt	7440-48-4	--	--	--	--	--	--	--	--	--	--				
Copper	7440-50-8	--	--	--	--	--	--	--	D	--	--				
Iron	7439-89-6	--	--	--	--	--	--	--	--	--	--				
Lead	7439-92-1	--	--	--	--	--	--	--	B2	--	--				
Manganese	7439-96-5	--	--	--	--	--	--	--	D	--	--				
Mercury (elemental)	7439-97-6	--	--	--	--	--	--	--	D	--	--				
Mercury (inorganic)	7487-94-7	--	--	--	--	--	--	--	--	--	--				
Methyl Mercury	22967-92-6	--	--	--	--	--	--	--	C	--	--				
Nickel	7440-02-0	--	--	--	--	--	--	--	--	--	--				
Silver	7440-22-4	--	--	--	--	--	--	--	D	--	--				
Vanadium	7440-62-2	--	--	--	--	--	--	--	--	--	--				
Zinc	7440-66-6	--	--	--	--	--	--	--	D	--	--				
Cyanide	57-12-5	--	--	--	--	--	--	--	D	--	--				
Total PCBs	PCB	2.0E+00	1/(mg/kg-day)	1	2.0E+00	1/(mg/kg-day)	0.14	5.45E-01	B2	S	Nov 2011				
Dioxin 2,3,7,8-TCDD TEQ <sup>(6)</sup>	DIOXIN TEQ	1.3E+05	1/(mg/kg-day)	1	1.3E+05	1/(mg/kg-day)	0.03	8.08E-01	--	C	Nov 2011				
Furan 2,3,7,8-TCDD TEQ <sup>(6)</sup>	FURAN TEQ	1.3E+05	1/(mg/kg-day)	1	1.3E+05	1/(mg/kg-day)	0.03	6.57E-01	--	C	Nov 2011				
Benzo(a)pyrene TEQ <sup>(7)</sup>	BAP	7.3E+00	1/(mg/kg-day)	1	7.3E+00	1/(mg/kg-day)	0.13	7.13E-01	B2	I	Nov 2011				
Benz(a)anthracene	56-55-3	7.3E-01	1/(mg/kg-day)	1	7.3E-01	1/(mg/kg-day)	0.13	5.52E-01	B2	E	Nov 2011				
Bis(2-ethylhexyl) phthalate	117-81-7	1.4E-02	1/(mg/kg-day)	1	1.4E-02	1/(mg/kg-day)	0.1	1.13E+00	B2	I	Nov 2011				
Carbazole <sup>(8)</sup>	86-74-8	2.0E-02	1/(mg/kg-day)	1	2.0E-02	1/(mg/kg-day)	0.1	5.36E-02	--	(6)	Oct 2004				
Chloroaniline, p-	106-47-8	2.0E-01	1/(mg/kg-day)	1	2.0E-01	1/(mg/kg-day)	0.1	4.96E-03	--	P	Nov 2011				
Chlorophenol, 2-	95-57-8	--	--	--	--	--	--	--	--	--	--				
Dibenzofuran	132-64-9	--	--	--	--	--	--	--	D	--	--				
Dichlorobenzene, 1,2-	95-50-1	--	--	--	--	--	--	--	D	--	--				
Dichlorobenzene, 1,3-	541-73-1	--	--	--	--	--	--	--	D	--	--				
Dichlorobenzene, 1,4-	106-46-7	5.4E-03	1/(mg/kg-day)	1	5.4E-03	1/(mg/kg-day)	--	4.53E-02	--	C	Nov 2011				
Dichlorophenol, 2,4-	120-83-2	--	--	--	--	--	--	--	--	--	--				
Hexachlorobenzene	118-74-1	1.6E+00	1/(mg/kg-day)	1	1.6E+00	1/(mg/kg-day)	0.1	2.54E-01	B2	I	Nov 2011				
Hexachlorobutadiene	87-68-3	7.8E-02	1/(mg/kg-day)	1	7.8E-02	1/(mg/kg-day)	0.1	8.10E-02	C	I	Nov 2011				
Methylnaphthalene, 2-	91-57-6	--	--	--	--	--	--	--	D	--	--				
Naphthalene	91-20-3	--	--	--	--	--	--	--	C	--	--				
Nitrobenzene	98-95-3	--	--	--	--	--	--	--	B1	--	--				
Pentachlorophenol	87-86-5	4.0E-01	1/(mg/kg-day)	1	4.0E-01	1/(mg/kg-day)	0.25	1.27E-01	B1	I	Nov 2011				
Phenanthrene	85-01-8	--	--	--	--	--	0.13	1.44E-01	D	--	--				
Trichlorobenzene, 1,2,4-	120-82-1	2.9E-02	1/(mg/kg-day)	1	2.9E-02	1/(mg/kg-day)	--	7.05E-02	D	P	Nov 2011				
Benzene	71-43-2	5.5E-02	1/(mg/kg-day)	1	5.5E-02	1/(mg/kg-day)	--	1.49E-02	A	I	Nov 2011				

**TABLE 6.1**  
**CANCER TOXICITY DATA -- ORAL/DERMAL**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

COPC	CAS No.	SFo <sup>(1)</sup>		GI Absorption <sup>(2)</sup> (unitless)	SFd <sup>(2)</sup>		DAF <sup>(2)</sup> (unitless)	Kp <sup>(3)</sup> (cm/hr)	Cancer Class <sup>(4)</sup>	SFo	
		Value	Units		Value	Units				Source <sup>(1)</sup>	Date <sup>(5)</sup>
Chlorobenzene	108-90-7	--	--	--	--	--	--	--	D	--	--
Chloroform	67-66-3	3.1E-02	1/(mg/kg-day)	1	3.1E-02	1/(mg/kg-day)	--	6.83E-03	B1	C	Nov 2011
Dichloroethane, 1,1-	75-34-3	5.7E-03	1/(mg/kg-day)	1	5.7E-03	1/(mg/kg-day)	--	6.75E-03	C	C	Nov 2011
Dichloroethane, 1,2-	107-06-2	9.1E-02	1/(mg/kg-day)	1	9.1E-02	1/(mg/kg-day)	--	4.20E-03	B2	I	--
Ethylbenzene	100-41-4	1.1E-02	1/(mg/kg-day)	1	1.1E-02	1/(mg/kg-day)	--	4.93E-02	D	C	Nov 2011
Methylene Chloride	75-09-2	7.5E-03	1/(mg/kg-day)	1	7.5E-03	1/(mg/kg-day)	--	3.54E-03	B2	I	Nov 2011
Tetrachloroethylene (PCE)	127-18-4	5.4E-01	1/(mg/kg-day)	1	5.4E-01	1/(mg/kg-day)	--	3.34E-02	--	C	Nov 2011
Trichloroethylene (TCE)	79-01-6	5.9E-03	1/(mg/kg-day)	1	5.9E-03	1/(mg/kg-day)	--	1.16E-02	--	C	Nov 2011
Vinyl Chloride	75-01-4	7.2E-01	1/(mg/kg-day)	1	7.2E-01	1/(mg/kg-day)	--	8.38E-03	A	I	Nov 2011
Xylenes, Mixed	1330-20-7	--	--	--	--	--	--	--	D	--	--

**Notes:**

(1) SFo and values obtained from USEPA Regional Screening Level (RSL) Tables for Chemical Contaminants at Superfund Sites (updated November 2010). The RSL Tables cite the following primary sources:

I = IRIS; USEPA's Integrated Risk Information System available at: <http://cfpub.epa.gov/ncea/iris/index.cfm>

P = PPRTV; the Provisional Peer Reviewed Toxicity Values derived for the USEPA Superfund program (not publicly available). P(X) indicates a withdrawn value.

A = ATSDR; the Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs) available at: <http://www.atsdr.cdc.gov/mrls/>

C = California EPA toxicity values available at: <http://www.oehha.ca.gov/risk/ChemicalDB/index.asp>

H = HEAST; the USEPA Superfund program's Health Effects Summary Tables (not publicly available)

(2) Gastrointestinal absorption factors (GIABS) and dermal absorption factors (DAF) obtained from USEPA RSL Tables (November 2010). RfD<sub>d</sub> values was calculated as follows:  
 SFd = SFo / GI Abs.

(3) Dermal permeability (Kp) coefficients obtained from RAGS Part E Exhibit 3-1 (Inorganics) and USEPA's EPI DermWIN v2.0 (organics).

(4) Cancer class reported by IRIS (USEPA, 2011):

-- = Not reported by IRIS

A = Human carcinogen (1986); Known/likely human carcinogen (1996)

B1 = Probable human carcinogen - based on limited evidence of carcinogenicity in humans (1986); Likely to be carcinogenic to humans (1999; 2005)

B2 = Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals (1986)

C = Possible human carcinogen (1986)

D = Not classifiable as to human carcinogenicity (1986); cannot be determined (1996); data are inadequate for an assessment of human carcinogenic potential (1999); inadequate information to assess carcinogenic potential (2005)

(5) Date of most recent RSL Tables.

(6) Concentrations of dioxins and furans are normalized to 2,3,7,8-TCDD using the World Health Organization (2005) toxicity equivalency factors.

(7) Concentrations of carcinogenic polycyclic aromatic hydrocarbons are normalized to benzo(a)pyrene using the toxicity equivalency factors obtained from the USEPA *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons* (July 1993).

(8) SFo for carbazole obtained from the 2004 USEPA Region 9 Preliminary Remediation Goal (PRG) Tables.

**Definitions:**

SFo = Oral Slope Factor

SFd = Dermal Slope Factor

DAF = Dermal Absorption Fraction

Kp = Dermal Permeability Coefficient

-- = Not applicable

**TABLE 6.2**  
**CANCER TOXICITY DATA -- INHALATION**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

COPC	CAS No.	URF <sup>(1)</sup>		VF <sup>(2)</sup> (m <sup>3</sup> /kg)	Cancer Class <sup>(3)</sup>	URF	
		Value	Units			Source <sup>(1)</sup>	Date <sup>(4)</sup>
Aluminum	7429-90-5	--	--	--	--	--	
Antimony	7440-36-0	--	--	--	--	--	--
Arsenic	7440-38-2	4.3E-03	1/(ug/m <sup>3</sup> )	--	A	I	Nov 2011
Barium	7440-39-3	--	--	--	D	--	--
Beryllium	7440-41-7	2.4E-03	1/(ug/m <sup>3</sup> )	--	A	I	Nov 2011
Cadmium	7440-43-9d	1.8E-03	1/(ug/m <sup>3</sup> )	--	B1	I	Nov 2011
Cadmium (water)	7440-43-9w	1.8E-03	1/(ug/m <sup>3</sup> )	--	B1	I	Nov 2011
Chromium, Hexavalent	18540-29-9	8.4E-02	1/(ug/m <sup>3</sup> )	--	A	S	Nov 2011
Cobalt	7440-48-4	9.0E-03	1/(ug/m <sup>3</sup> )	--	--	P	Nov 2011
Copper	7440-50-8	--	--	--	D	--	--
Iron	7439-89-6	--	--	--	--	--	--
Lead	7439-92-1	--	--	--	B2	--	--
Manganese	7439-96-5	--	--	--	D	--	--
Mercury (elemental)	7439-97-6	--	--	--	D	--	--
Mercury (inorganic)	7487-94-7	--	--	--	--	--	--
Methyl Mercury	22967-92-6	--	--	--	C	--	
Nickel	7440-02-0	2.6E-04	1/(ug/m <sup>3</sup> )	--	--	C	Nov 2011
Silver	7440-22-4	--	--	--	D	--	--
Vanadium	7440-62-2	--	--	--	--	--	--
Zinc	7440-66-6	--	--	--	D	--	--
Cyanide	57-12-5	--	--	--	D	--	--
Total PCBs	PCB	5.7E-04	1/(ug/m <sup>3</sup> )	--	B2	S	Nov 2011
Dioxin 2,3,7,8-TCDD TEQ <sup>(5)</sup>	DIOXIN TEQ	3.8E+01	1/(ug/m <sup>3</sup> )	--	--	C	Nov 2011
Furan 2,3,7,8-TCDD TEQ <sup>(5)</sup>	FURAN TEQ	3.8E+01	1/(ug/m <sup>3</sup> )	--	--	C	Nov 2011
Benzo(a)pyrene TEQ <sup>(6)</sup>	BAP	1.1E-03	1/(ug/m <sup>3</sup> )	--	B2	C	Nov 2011
Benz(a)anthracene	56-55-3	1.1E-04	1/(ug/m <sup>3</sup> )	--	B2	C	Nov 2011
Bis(2-ethylhexyl) phthalate	117-81-7	2.4E-06	1/(ug/m <sup>3</sup> )	--	B2	C	Nov 2011
Carbazole	86-74-8	--	--	--	--	--	--
Chloroaniline, p-	106-47-8	--	--	--	--	--	--
Chlorophenol, 2-	95-57-8	--	--	--	--	--	--
Dibenzofuran	132-64-9	--	--	--	D	--	--
Dichlorobenzene, 1,2-	95-50-1	--	--	--	D	--	--
Dichlorobenzene, 1,3-	541-73-1	--	--	--	D	--	--
Dichlorobenzene, 1,4-	106-46-7	1.1E-05	1/(ug/m <sup>3</sup> )	7.67E+03	--	C	Nov 2011
Dichlorophenol, 2,4-	120-83-2	--	--	--	--	--	--
Hexachlorobenzene	118-74-1	4.6E-04	1/(ug/m <sup>3</sup> )	--	B2	I	Nov 2011
Hexachlorobutadiene	87-68-3	2.2E-05	1/(ug/m <sup>3</sup> )	--	C	I	Nov 2011
Methylnaphthalene, 2-	91-57-6	--	--	--	D	--	--
Naphthalene	91-20-3	3.4E-05	1/(ug/m <sup>3</sup> )	3.40E+04	C	C	Nov 2011
Nitrobenzene	98-95-3	4.0E-05	1/(ug/m <sup>3</sup> )	5.38E+04	B1	I	Nov 2011
Pentachlorophenol	87-86-5	5.1E-06	1/(ug/m <sup>3</sup> )	--	B1	C	Nov 2011
Phenanthrene	85-01-8	--	--	--	D	--	--
Trichlorobenzene, 1,2,4-	120-82-1	--	--	--	D	--	--
Benzene	71-43-2	7.8E-06	1/(ug/m <sup>3</sup> )	2.60E+03	A	I	Nov 2011
Chlorobenzene	108-90-7	--	--	--	D	--	--

**TABLE 6.2**  
**CANCER TOXICITY DATA -- INHALATION**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

COPC	CAS No.	URF <sup>(1)</sup>		VF <sup>(2)</sup> (m <sup>3</sup> /kg)	Cancer Class <sup>(3)</sup>	URF	
		Value	Units			Source <sup>(1)</sup>	Date <sup>(4)</sup>
Chloroform	67-66-3	2.3E-05	1/(ug/m <sup>3</sup> )	1.93E+03	B1	I	Nov 2011
Dichloroethane, 1,1-	75-34-3	1.6E-06	1/(ug/m <sup>3</sup> )	1.53E+03	C	C	Nov 2011
Dichloroethane, 1,2-	107-06-2	2.6E-05	1/(ug/m <sup>3</sup> )	3.36E+03	B2	I	Nov 2011
Ethylbenzene	100-41-4	2.5E-06	1/(ug/m <sup>3</sup> )	4.16E+03	D	C	Nov 2011
Methylene Chloride	75-09-2	4.7E-07	1/(ug/m <sup>3</sup> )	1.61E+03	B2	I	Nov 2011
Tetrachloroethylene (PCE)	127-18-4	5.9E-06	1/(ug/m <sup>3</sup> )	1.72E+03	--	C	Nov 2011
Trichloroethylene (TCE)	79-01-6	2.0E-06	1/(ug/m <sup>3</sup> )	1.62E+03	--	C	Nov 2011
Vinyl Chloride	75-01-4	4.4E-06	1/(ug/m <sup>3</sup> )	7.02E+02	A	I	Nov 2011
Xylenes, Mixed	1330-20-7	--	--	--	D	--	--

**Notes:**

(1) SFo and values obtained from USEPA Regional Screening Level (RSL) Tables for Chemical Contaminants at Superfund Sites (updated November 2010). The RSL Tables cite the following primary sources:

I = IRIS; USEPA's Integrated Risk Information System available at: <http://cfpub.epa.gov/ncea/iris/index.cfm>

P = PPRTV; the Provisional Peer Reviewed Toxicity Values derived for the USEPA Superfund program (not publicly available). P(X) indicates a withdrawn value.

A = ATSDR; the Agency for Toxic Substances and Disease Registry Minimal Risk Levels (MRLs) available at: <http://www.atsdr.cdc.gov/mrls/>

C = California EPA toxicity values available at: <http://www.oehha.ca.gov/risk/ChemicalDB/index.asp>

H = HEAST; the USEPA Superfund program's Health Effects Summary Tables (not publicly available)

(2) Chemical-specific VFs were calculated using the default equation presented in the USEPA (1996) Soil Screening Guidance. Equations and inputs are presented in Attachment A.

(3) Cancer class reported by IRIS (USEPA, 2011):

-- = Not reported by IRIS

A = Human carcinogen (1986); Known/likely human carcinogen (1996)

B1 = Probable human carcinogen - based on limited evidence of carcinogenicity in humans (1986); Likely to be carcinogenic to humans (1999; 2005)

B2 = Probable human carcinogen - based on sufficient evidence of carcinogenicity in animals (1986)

C = Possible human carcinogen (1986)

D = Not classifiable as to human carcinogenicity (1986); cannot be determined (1996); data are inadequate for an assessment of human carcinogenic potential (1999); inadequate information to assess carcinogenic potential (2005)

(4) Date of most recent RSL Tables.

(5) Concentrations of dioxins and furans are normalized to 2,3,7,8-TCDD using the World Health Organization (2005) toxicity equivalency factors.

(6) Concentrations of carcinogenic polycyclic aromatic hydrocarbons are normalized to benzo(a)pyrene using the toxicity equivalency factors obtained from the USEPA *Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons* (July 1993).

**Definitions:**

URF = Unit Risk Factor

VF = Volatilization Factor

-- = Not applicable

**TABLE 7.1.RME**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL AND GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (RME)
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations					
					Value	Units	Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient		
							Value	Units	Value	Units		Value	Units	Value	Units			
Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs)	Ingestion	Aluminum	1.2E+04	mg/kg	4.4E-03	mg/kg-day	--	--	--	1.2E-02	mg/kg-day	1.0E+00	mg/kg-day	1.2E-02		
				Antimony	1.3E+01	mg/kg	4.4E-06	mg/kg-day	--	--	--	1.2E-05	mg/kg-day	4.0E-04	mg/kg-day	3.1E-02		
				Arsenic	2.2E+01	mg/kg	7.8E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.2E-05	2.2E-05	mg/kg-day	3.0E-04	mg/kg-day	7.3E-02		
				Barium	2.0E+03	mg/kg	6.9E-04	mg/kg-day	--	--	--	1.9E-03	mg/kg-day	2.0E-01	mg/kg-day	9.7E-03		
				Beryllium	3.8E+00	mg/kg	1.3E-06	mg/kg-day	--	--	--	3.7E-06	mg/kg-day	2.0E-03	mg/kg-day	1.9E-03		
				Cadmium	3.8E+00	mg/kg	1.3E-06	mg/kg-day	--	--	--	3.7E-06	mg/kg-day	1.0E-03	mg/kg-day	3.7E-03		
				Chromium, Hexavalent	2.9E+00	mg/kg	1.0E-06	mg/kg-day	5.0E-01	1/(mg/kg-day)	5.0E-07	2.8E-06	mg/kg-day	3.0E-03	mg/kg-day	9.3E-04		
				Cobalt	6.1E+01	mg/kg	2.1E-05	mg/kg-day	--	--	--	6.0E-05	mg/kg-day	3.0E-04	mg/kg-day	2.0E-01		
				Copper	1.7E+03	mg/kg	6.1E-04	mg/kg-day	--	--	--	1.7E-03	mg/kg-day	4.0E-02	mg/kg-day	4.3E-02		
				Iron	6.3E+04	mg/kg	2.2E-02	mg/kg-day	--	--	--	6.2E-02	mg/kg-day	7.0E-01	mg/kg-day	8.8E-02		
				Lead	6.0E+02	mg/kg	2.1E-04	mg/kg-day	--	--	--	5.8E-04	mg/kg-day	--	--	--		
				Manganese	7.8E+02	mg/kg	2.7E-04	mg/kg-day	--	--	--	7.6E-04	mg/kg-day	2.4E-02	mg/kg-day	3.2E-02		
				Mercury (elemental)	1.2E+02	mg/kg	4.3E-05	mg/kg-day	--	--	--	1.2E-04	mg/kg-day	1.6E-04	mg/kg-day	7.5E-01		
				Mercury (inorganic)	1.1E+03	mg/kg	3.9E-04	mg/kg-day	--	--	--	1.1E-03	mg/kg-day	3.0E-04	mg/kg-day	3.6E+00		
				Nickel	1.5E+02	mg/kg	5.2E-05	mg/kg-day	--	--	--	1.5E-04	mg/kg-day	2.0E-02	mg/kg-day	7.3E-03		
				Silver	2.3E+00	mg/kg	8.1E-07	mg/kg-day	--	--	--	2.3E-06	mg/kg-day	5.0E-03	mg/kg-day	4.5E-04		
				Vanadium	5.1E+01	mg/kg	1.8E-05	mg/kg-day	--	--	--	4.9E-05	mg/kg-day	7.0E-05	mg/kg-day	7.1E-01		
				Zinc	1.3E+04	mg/kg	4.7E-03	mg/kg-day	--	--	--	1.3E-02	mg/kg-day	3.0E-01	mg/kg-day	4.4E-02		
				Total PCBs	4.0E+00	mg/kg	1.4E-06	mg/kg-day	2.0E+00	1/(mg/kg-day)	2.8E-06	3.9E-06	mg/kg-day	2.0E-05	mg/kg-day	1.9E-01		
				Dioxin 2,3,7,8-TCDD TEQ	1.2E-05	mg/kg	4.2E-12	mg/kg-day	1.3E+05	1/(mg/kg-day)	5.5E-07	1.2E-11	mg/kg-day	1.0E-09	mg/kg-day	1.2E-02		
				Furan 2,3,7,8-TCDD TEQ	4.4E-04	mg/kg	1.5E-10	mg/kg-day	1.3E+05	1/(mg/kg-day)	2.0E-05	4.3E-10	mg/kg-day	1.0E-09	mg/kg-day	4.3E-01		
				Benzo(a)pyrene TEQ	4.2E+00	mg/kg	1.5E-06	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.1E-05	4.1E-06	mg/kg-day	--	--	--		
				Bis(2-ethylhexyl) phthalate	4.1E+00	mg/kg	1.4E-06	mg/kg-day	1.4E-02	1/(mg/kg-day)	2.0E-08	4.0E-06	mg/kg-day	2.0E-02	mg/kg-day	2.0E-04		
				Dibenzofuran	6.7E-01	mg/kg	2.3E-07	mg/kg-day	--	--	--	6.5E-07	mg/kg-day	1.0E-03	mg/kg-day	6.5E-04		
				Dichlorobenzene, 1,4-	1.4E-01	mg/kg	5.0E-08	mg/kg-day	5.4E-03	1/(mg/kg-day)	2.7E-10	1.4E-07	mg/kg-day	7.0E-02	mg/kg-day	2.0E-06		
				Hexachlorobenzene	5.7E+01	mg/kg	2.0E-05	mg/kg-day	1.6E+00	1/(mg/kg-day)	3.2E-05	5.6E-05	mg/kg-day	8.0E-04	mg/kg-day	7.0E-02		
				Hexachlorobutadiene	2.0E+00	mg/kg	6.9E-07	mg/kg-day	7.8E-02	1/(mg/kg-day)	5.4E-08	1.9E-06	mg/kg-day	1.0E-03	mg/kg-day	1.9E-03		
				Naphthalene	9.5E-01	mg/kg	3.3E-07	mg/kg-day	--	--	--	9.3E-07	mg/kg-day	2.0E-02	mg/kg-day	4.7E-05		
				Benzene	5.2E-01	mg/kg	1.8E-07	mg/kg-day	5.5E-02	1/(mg/kg-day)	1.0E-08	3.1E-07	mg/kg-day	4.0E-03	mg/kg-day	1.3E-04		
				Chloroform	3.3E-01	mg/kg	1.1E-07	mg/kg-day	3.1E-02	1/(mg/kg-day)	3.6E-09	3.2E-07	mg/kg-day	1.0E-02	mg/kg-day	3.2E-05		
				Tetrachloroethylene (PCE)	3.5E-02	mg/kg	1.2E-08	mg/kg-day	5.4E-01	1/(mg/kg-day)	6.6E-09	3.4E-08	mg/kg-day	1.0E-02	mg/kg-day	3.4E-06		
				Trichloroethylene (TCE)	2.8E+00	mg/kg	9.9E-07	mg/kg-day	5.9E-03	1/(mg/kg-day)	5.8E-09	2.8E-06	mg/kg-day	--	--	--		
				Vinyl Chloride	1.0E-02	mg/kg	3.5E-09	mg/kg-day	7.2E-01	1/(mg/kg-day)	9.9E-09	9.9E-09	mg/kg-day	3.0E-03	mg/kg-day	3.3E-06		
Route Total											7.8E-05					6.3E+00		
Dermal Contact	Dermal Contact	Dermal Contact	Dermal Contact	Aluminum	1.2E+04	mg/kg	--	--	--	--	--	--	1.0E+00	mg/kg-day	--			
				Antimony	1.3E+01	mg/kg	--	--	--	--	--	--	6.0E-05	mg/kg-day	--			
				Arsenic	2.2E+01	mg/kg	1.5E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	2.3E-06	4.3E-06	mg/kg-day	3.0E-04	mg/kg-day	1.4E-02		
				Barium	2.0E+03	mg/kg	--	--	--	--	--	--	1.4E-02	mg/kg-day	--			
				Beryllium	3.8E+00	mg/kg	--	--	--	--	--	--	1.4E-05	mg/kg-day	--			
				Cadmium	3.8E+00	mg/kg	--	--	--	--	--	2.5E-08	mg/kg-day	2.5E-05	mg/kg-day	9.9E-04		
				Chromium, Hexavalent	2.9E+00	mg/kg	--	--	2.0E+01	1/(mg/kg-day)	--	--	--	7.5E-05	mg/kg-day	--		
				Cobalt	6.1E+01	mg/kg	--	--	--	--	--	--	3.0E-04	mg/kg-day	--			
				Copper	1.7E+03	mg/kg	--	--	--	--	--	--	4.0E-02	mg/kg-day	--			
				Iron	6.3E+04	mg/kg	--	--	--	--	--	--	7.0E-01	mg/kg-day	--			
				Lead	6.0E+02	mg/kg	--	--	--	--	--	--	--	--	--			
				Manganese	7.8E+02	mg/kg	--	--	--	--	--	--	9.6E-04	mg/kg-day	--			
				Mercury (elemental)	1.2E+02	mg/kg	--	--	--	--	--	--	1.6E-04	mg/kg-day	--			
				Mercury (inorganic)	1.1E+03	mg/kg	--	--	--	--	--	--	2.1E-05	mg/kg-day	--			
				Nickel	1.5E+02	mg/kg	--	--	--	--	--	--	8.0E-04	mg/kg-day	--			
				Silver	2.3E+00	mg/kg	--	--	--	--	--	--	2.0E-04	mg/kg-day	--			
				Vanadium	5.1E+01	mg/kg	--	--	--	--	--	--	1.8E-06	mg/kg-day	--			
				Zinc	1.3E+04	mg/kg	--	--	--	--	--	--	3.0E-01	mg/kg-day	--			
				Total PCBs	4.0E+00	mg/kg	1.3E-06	mg/kg-day	2.0E+00	1/(mg/kg-day)	2.6E-06	3.6E-06	mg/kg-day	2.0E-05	mg/kg-day	1.8E-01		

**TABLE 7.1.RME**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL AND GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (RME)
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				Non-Cancer Hazard Calculations							
					Value	Units	Intake		CSF		Cancer Risk	Intake	Units	RfD	Hazard Quotient			
							Value	Units	Value	Units								
Surface Soil (0 to 2 ft bgs) (continued)	Surface Soil (0 to 2 ft bgs) (continued)	Surface Soil Contact (continued)	Dermal (continued)	Dioxin 2,3,7,8-TCDD TEQ	1.2E-05	mg/kg	8.4E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	1.1E-07	2.3E-12	mg/kg-day	1.0E-09	mg/kg-day	2.3E-03		
				Furan 2,3,7,8-TCDD TEQ	4.4E-04	mg/kg	3.1E-11	mg/kg-day	1.3E+05	1/(mg/kg-day)	4.0E-06	8.6E-11	mg/kg-day	1.0E-09	mg/kg-day	8.6E-02		
				Benz(a)pyrene TEQ	4.2E+00	mg/kg	1.2E-06	mg/kg-day	7.3E+00	1/(mg/kg-day)	9.1E-06	--	--	--	--	--		
				Bis(2-ethylhexyl) phthalate	4.1E+00	mg/kg	9.4E-07	mg/kg-day	1.4E-02	1/(mg/kg-day)	1.3E-08	2.6E-06	mg/kg-day	2.0E-02	mg/kg-day	1.3E-04		
				Dibenzofuran	6.7E-01	mg/kg	--	--	--	--	--	--	--	--	1.0E-03	mg/kg-day	--	
				Dichlorobenzene, 1,4-	1.4E-01	mg/kg	--	--	5.4E-03	1/(mg/kg-day)	--	--	--	--	7.0E-02	mg/kg-day	--	
				Hexachlorobenzene	5.7E+01	mg/kg	1.3E-05	mg/kg-day	1.6E+00	1/(mg/kg-day)	2.1E-05	3.7E-05	mg/kg-day	8.0E-04	mg/kg-day	4.6E-02		
				Hexachlorobutadiene	2.0E+00	mg/kg	4.5E-07	mg/kg-day	7.8E-02	1/(mg/kg-day)	3.5E-08	1.3E-06	mg/kg-day	1.0E-03	mg/kg-day	1.3E-03		
				Naphthalene	9.5E-01	mg/kg	--	--	--	--	--	8.0E-07	--	--	2.0E-02	mg/kg-day	4.0E-05	
				Benzene	5.2E-01	mg/kg	--	--	5.5E-02	1/(mg/kg-day)	--	--	--	--	4.0E-03	mg/kg-day	--	
				Chloroform	3.3E-01	mg/kg	--	--	3.1E-02	1/(mg/kg-day)	--	--	--	--	1.0E-02	mg/kg-day	--	
				Tetrachloroethylene (PCE)	3.5E-02	mg/kg	--	--	5.4E-01	1/(mg/kg-day)	--	--	--	--	1.0E-02	mg/kg-day	--	
				Trichloroethylene (TCE)	2.8E+00	mg/kg	--	--	5.9E-03	1/(mg/kg-day)	--	--	--	--	--	--	--	
				Vinyl Chloride	1.0E-02	mg/kg	--	--	7.2E-01	1/(mg/kg-day)	--	--	--	--	3.0E-03	mg/kg-day	--	
				Route Total								3.9E-05				3.3E-01		
Exposure Medium Total											1.2E-04					6.6E+00		
Outdoor Air	Pariculates/ Vapors in Outdoor Air	Inhalation		Aluminum	1.2E+04	mg/kg	1.5E-03	µg/m³	--	1/(µg/m³)	--	4.2E-06	mg/m³	5.0E-03	mg/m³	8.4E-04		
				Antimony	1.3E+01	mg/kg	1.5E-06	µg/m³	--	1/(µg/m³)	--	4.3E-09	mg/m³	--	mg/m³	--		
				Arsenic	2.2E+01	mg/kg	2.7E-06	µg/m³	4.3E-03	1/(µg/m³)	1.2E-08	7.5E-09	mg/m³	1.5E-05	mg/m³	5.0E-04		
				Barium	2.0E+03	mg/kg	2.4E-04	µg/m³	--	1/(µg/m³)	--	6.7E-07	mg/m³	5.0E-04	mg/m³	1.3E-03		
				Beryllium	3.8E+00	mg/kg	4.6E-07	µg/m³	2.4E-03	1/(µg/m³)	1.1E-09	1.3E-09	mg/m³	2.0E-05	mg/m³	6.4E-05		
				Cadmium	3.8E+00	mg/kg	4.6E-07	µg/m³	1.8E-03	1/(µg/m³)	8.3E-10	1.3E-09	mg/m³	1.0E-05	mg/m³	1.3E-04		
				Chromium, Hexavalent	2.9E+00	mg/kg	3.5E-07	µg/m³	8.4E-02	1/(µg/m³)	2.9E-08	9.7E-10	mg/m³	1.0E-04	mg/m³	9.7E-06		
				Cobalt	6.1E+01	mg/kg	7.4E-06	µg/m³	9.0E-03	1/(µg/m³)	6.6E-08	2.1E-08	mg/m³	6.0E-06	mg/m³	3.4E-03		
				Copper	1.7E+03	mg/kg	2.1E-04	µg/m³	--	1/(µg/m³)	--	5.9E-07	mg/m³	--	mg/m³	--		
				Iron	6.3E+04	mg/kg	7.6E-03	µg/m³	--	1/(µg/m³)	--	2.1E-05	mg/m³	--	mg/m³	--		
				Lead	6.0E+02	mg/kg	7.2E-05	µg/m³	--	1/(µg/m³)	--	2.0E-07	mg/m³	--	mg/m³	--		
				Manganese	7.8E+02	mg/kg	9.4E-05	µg/m³	--	1/(µg/m³)	--	2.6E-07	mg/m³	5.0E-05	mg/m³	5.3E-03		
				Mercury (elemental)	1.2E+02	mg/kg	1.5E-05	µg/m³	--	1/(µg/m³)	--	1.3E-03	mg/m³	3.0E-04	mg/m³	4.2E+00		
				Mercury (inorganic)	1.1E+03	mg/kg	1.3E-04	µg/m³	--	1/(µg/m³)	--	3.7E-07	mg/m³	3.0E-05	mg/m³	1.2E-02		
				Nickel	1.5E+02	mg/kg	1.8E-05	µg/m³	2.6E-04	1/(µg/m³)	4.7E-09	5.0E-08	mg/m³	9.0E-05	mg/m³	5.6E-04		
				Silver	2.3E+00	mg/kg	2.8E-07	µg/m³	--	1/(µg/m³)	--	7.8E-10	mg/m³	--	mg/m³	--		
				Vanadium	5.1E+01	mg/kg	6.1E-06	µg/m³	--	1/(µg/m³)	--	1.7E-08	mg/m³	1.0E-04	mg/m³	1.7E-04		
				Zinc	1.3E+04	mg/kg	1.6E-03	µg/m³	--	1/(µg/m³)	--	4.5E-06	mg/m³	--	mg/m³	--		
				Total PCBs	4.0E+00	mg/kg	4.8E-07	µg/m³	5.7E-04	1/(µg/m³)	2.7E-10	1.3E-09	mg/m³	--	mg/m³	--		
				Dioxin 2,3,7,8-TCDD TEQ	1.2E-05	mg/kg	1.5E-12	µg/m³	3.8E+01	1/(µg/m³)	5.6E-11	4.1E-15	mg/m³	4.0E-08	mg/m³	1.0E-07		
				Furan 2,3,7,8-TCDD TEQ	4.4E-04	mg/kg	5.3E-11	µg/m³	3.8E+01	1/(µg/m³)	2.0E-09	1.5E-13	mg/m³	4.0E-08	mg/m³	3.7E-06		
				Benz(a)pyrene TEQ	4.2E+00	mg/kg	5.0E-07	µg/m³	1.1E-03	1/(µg/m³)	5.5E-10	1.4E-09	mg/m³	--	mg/m³	--		
				Bis(2-ethylhexyl) phthalate	4.1E+00	mg/kg	4.9E-07	µg/m³	2.4E-06	1/(µg/m³)	1.2E-12	1.4E-09	mg/m³	--	mg/m³	--		
				Dibenzofuran	6.7E-01	mg/kg	8.1E-08	µg/m³	--	1/(µg/m³)	--	2.3E-10	mg/m³	--	mg/m³	--		
				Dichlorobenzene, 1,4-	1.4E-01	mg/kg	1.5E-03	µg/m³	1.1E-05	1/(µg/m³)	1.7E-08	4.3E-06	mg/m³	8.0E-01	mg/m³	5.4E-06		
				Hexachlorobenzene	5.7E+01	mg/kg	6.9E-06	µg/m³	4.6E-04	1/(µg/m³)	3.2E-09	1.9E-08	mg/m³	--	mg/m³	--		
				Hexachlorobutadiene	2.0E+00	mg/kg	2.4E-07	µg/m³	2.2E-05	1/(µg/m³)	5.2E-12	6.6E-10	mg/m³	--	mg/m³	--		
				Naphthalene	9.5E-01	mg/kg	2.3E-03	µg/m³	3.4E-05	1/(µg/m³)	7.8E-08	6.4E-06	mg/m³	3.0E-03	mg/m³	2.1E-03		
				Benzene	5.2E-01	mg/kg	1.6E-02	µg/m³	7.8E-06	1/(µg/m³)	1.3E-07	4.6E-05	mg/m³	3.0E-02	mg/m³	1.5E-03		
				Chloroform	3.3E-01	mg/kg	1.4E-02	µg/m³	2.3E-05	1/(µg/m³)	3.2E-07	3.9E-05	mg/m³	9.8E-02	mg/m³	4.0E-04		
				Tetrachloroethylene (PCE)	3.5E-02	mg/kg	1.6E-03	µg/m³	5.9E-06	1/(µg/m³)	9.7E-09	4.6E-06	mg/m³	2.7E-01	mg/m³	1.7E-05		
				Trichloroethylene (TCE)	2.8E+00	mg/kg	1.4E-01	µg/m³	2.0E-06	1/(µg/m³)	2.8E-07	9.6E-10	mg/m³	--	mg/m³	--		
				Vinyl Chloride	1.0E-02	mg/kg	1.2E-03	µg/m³	4.4E-06	1/(µg/m³)	5.2E-09	3.3E-06	mg/m³	1.0E-01	mg/m³	3.3E-05		
				Route Total							9.6E-07				4.2E+00			
Exposure Medium Total											9.6E-07				4.2E+00			
Surface Soil Total											1.2E-04				1.1E+01			

**TABLE 7.1.RME**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL AND GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (RME)
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				Non-Cancer Hazard Calculations				Hazard Quotient			
					Value	Units	Intake		CSF		Cancer Risk	Intake	Units	Value	Units	RfD		
							Value	Units	Value	Units								
Groundwater	Overburden Groundwater	Potable Groundwater	Ingestion	Antimony	6.0E+00	µg/L	2.1E-05	mg/kg-day	--	--	--	5.9E-05	mg/kg-day	4.0E-04	mg/kg-day	1.5E-01		
				Arsenic	2.8E+02	µg/L	9.6E-04	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.4E-03	2.7E-03	mg/kg-day	3.0E-04	mg/kg-day	9.0E+00		
				Barium	1.4E+04	µg/L	5.0E-02	mg/kg-day	--	--	--	1.4E-01	mg/kg-day	2.0E-01	mg/kg-day	6.9E-01		
				Cadmium	2.3E+01	µg/L	8.0E-05	mg/kg-day	--	--	--	2.2E-04	mg/kg-day	5.0E-04	mg/kg-day	4.5E-01		
				Cobalt	1.9E+02	µg/L	6.6E-04	mg/kg-day	--	--	--	1.9E-03	mg/kg-day	3.0E-04	mg/kg-day	6.2E+00		
				Iron	3.5E+05	µg/L	1.2E+00	mg/kg-day	--	--	--	3.4E+00	mg/kg-day	7.0E-01	mg/kg-day	4.8E+00		
Groundwater (continued)	Overburden Groundwater (continued)	Potable Groundwater (continued)	Ingestion (continued)	Manganese	2.2E+05	µg/L	7.7E-01	mg/kg-day	--	--	--	2.1E+00	mg/kg-day	2.4E-02	mg/kg-day	8.9E+01		
				Mercury	2.3E+02	µg/L	8.1E-04	mg/kg-day	--	--	--	2.3E-03	mg/kg-day	3.0E-04	mg/kg-day	7.6E+00		
				Methyl Mercury	1.7E+02	µg/L	5.9E-04	mg/kg-day	--	--	--	1.6E-03	mg/kg-day	1.0E-04	mg/kg-day	1.6E+01		
				Vanadium	1.4E+02	µg/L	4.8E-04	mg/kg-day	--	--	--	1.3E-03	mg/kg-day	7.0E-05	mg/kg-day	1.9E+01		
				Zinc	1.7E+03	µg/L	5.9E-03	mg/kg-day	--	--	--	1.7E-02	mg/kg-day	3.0E-01	mg/kg-day	5.5E-02		
				Cyanide	7.7E+01	µg/L	2.7E-04	mg/kg-day	--	--	--	7.5E-04	mg/kg-day	2.0E-02	mg/kg-day	3.8E-02		
				Dioxin 2,3,7,8-TCDD TEQ	1.9E-05	µg/L	6.6E-11	mg/kg-day	1.3E+05	1/(mg/kg-day)	8.6E-06	1.9E-10	mg/kg-day	1.0E-09	mg/kg-day	1.9E-01		
				Furan 2,3,7,8-TCDD TEQ	1.6E-04	µg/L	5.7E-10	mg/kg-day	1.3E+05	1/(mg/kg-day)	7.3E-05	1.6E-09	mg/kg-day	1.0E-09	mg/kg-day	1.6E+00		
				Benz(a)anthracene	7.8E-01	µg/L	2.7E-06	mg/kg-day	7.3E-01	1/(mg/kg-day)	2.0E-06	7.6E-06	mg/kg-day	--	--	--		
				Naphthalene	5.6E+02	µg/L	2.0E-03	mg/kg-day	--	--	--	5.5E-03	mg/kg-day	2.0E-02	mg/kg-day	2.7E-01		
				Carbazole	1.4E+02	µg/L	5.0E-04	mg/kg-day	2.0E-02	1/(mg/kg-day)	1.0E-05	1.4E-03	mg/kg-day	--	--	--		
				Chloroaniline, p-	4.5E+03	µg/L	1.6E-02	mg/kg-day	2.0E-01	1/(mg/kg-day)	3.1E-03	4.4E-02	mg/kg-day	4.0E-03	mg/kg-day	1.1E+01		
				Dibenzofuran	1.6E+01	µg/L	5.7E-05	mg/kg-day	--	--	--	1.6E-04	mg/kg-day	1.0E-03	mg/kg-day	1.6E-01		
				Dichlorobenzene, 1,2-	4.2E+03	µg/L	1.5E-02	mg/kg-day	--	--	--	4.1E-02	mg/kg-day	9.0E-02	mg/kg-day	4.6E-01		
				Dichlorobenzene, 1,3-	2.0E+02	µg/L	7.0E-04	mg/kg-day	--	--	--	1.9E-03	mg/kg-day	9.0E-02	mg/kg-day	2.2E-02		
				Dichlorobenzene, 1,4-	5.8E+02	µg/L	2.0E-03	mg/kg-day	5.4E-03	1/(mg/kg-day)	1.1E-05	5.7E-03	mg/kg-day	7.0E-02	mg/kg-day	8.1E-02		
				Hexachlorobenzene	1.0E+00	µg/L	3.5E-06	mg/kg-day	1.6E+00	1/(mg/kg-day)	5.6E-06	9.8E-06	mg/kg-day	8.0E-04	mg/kg-day	1.2E-02		
				Nitrobenzene	5.5E+01	µg/L	1.9E-04	mg/kg-day	--	--	--	5.4E-04	mg/kg-day	2.0E-03	mg/kg-day	2.7E-01		
				Dichlorophenol, 2,4-	1.2E+01	µg/L	4.1E-05	mg/kg-day	--	--	--	1.1E-04	mg/kg-day	3.0E-03	mg/kg-day	3.8E-02		
				Chlorophenol, 2-	2.6E+01	µg/L	9.1E-05	mg/kg-day	--	--	--	2.6E-04	mg/kg-day	5.0E-03	mg/kg-day	5.1E-02		
				Pentachlorophenol	1.9E+00	µg/L	6.5E-06	mg/kg-day	4.0E-01	1/(mg/kg-day)	2.6E-06	1.8E-05	mg/kg-day	5.0E-03	mg/kg-day	3.7E-03		
				Trichlorobenzene, 1,2,4-	2.9E+02	µg/L	1.0E-03	mg/kg-day	2.9E-02	1/(mg/kg-day)	2.9E-05	2.8E-03	mg/kg-day	1.0E-02	mg/kg-day	2.8E-01		
				Benzene	8.5E+02	µg/L	3.0E-03	mg/kg-day	5.5E-02	1/(mg/kg-day)	1.6E-04	8.3E-03	mg/kg-day	4.0E-03	mg/kg-day	2.1E+00		
				Chlorobenzene	1.6E+04	µg/L	5.7E-02	mg/kg-day	--	--	--	1.6E-01	mg/kg-day	2.0E-02	mg/kg-day	7.9E+00		
				Chloroform	3.5E+00	µg/L	1.2E-05	mg/kg-day	3.1E-02	1/(mg/kg-day)	3.8E-07	3.4E-05	mg/kg-day	1.0E-02	mg/kg-day	3.4E-03		
				Dichloroethane, 1,1-	2.6E+00	µg/L	9.1E-06	mg/kg-day	5.7E-03	1/(mg/kg-day)	5.2E-08	2.5E-05	mg/kg-day	2.0E-01	mg/kg-day	1.3E-04		
				Dichloroethane, 1,2-	1.8E+00	µg/L	6.3E-06	mg/kg-day	9.1E-02	1/(mg/kg-day)	5.7E-07	1.8E-05	mg/kg-day	2.0E-02	mg/kg-day	8.8E-04		
				Ethylbenzene	3.0E+01	µg/L	1.1E-04	mg/kg-day	1.1E-02	1/(mg/kg-day)	1.2E-06	3.0E-04	mg/kg-day	1.0E-01	mg/kg-day	3.0E-03		
				Methylene Chloride	2.0E+03	µg/L	6.8E-03	mg/kg-day	7.5E-03	1/(mg/kg-day)	5.1E-05	1.9E-02	mg/kg-day	6.0E-02	mg/kg-day	3.2E-01		
				Tetrachloroethylene (PCE)	6.9E+00	µg/L	2.4E-05	mg/kg-day	5.4E-01	1/(mg/kg-day)	1.3E-05	6.8E-05	mg/kg-day	1.0E-02	mg/kg-day	6.8E-03		
				Vinyl Chloride	7.1E-01	µg/L	2.5E-06	mg/kg-day	7.2E-01	1/(mg/kg-day)	1.8E-06	6.9E-06	mg/kg-day	3.0E-03	mg/kg-day	2.3E-03		
				Xylenes, Mixed	1.3E+02	µg/L	4.5E-04	mg/kg-day	--	--	--	1.3E-03	mg/kg-day	2.0E-01	mg/kg-day	6.3E-03		
Route Total											4.9E-03				1.8E+02			
Exposure Medium Total											4.9E-03				1.8E+02			
Groundwater Total											4.9E-03				1.8E+02			
Total of Receptor Risks Across All Media											5.1E-03	Total of Receptor Hazards Across All Media				1.9E+02		

**TABLE 7.1.CTE**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL AND GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (CTE)
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations					
					Value	Units	Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient		
							Value	Units	Value	Units		Value	Units	Value	Units			
Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs)	Ingestion	Aluminum	1.2E+04	mg/kg	7.1E-04	mg/kg-day	--	--	--	5.5E-03	mg/kg-day	1.0E+00	mg/kg-day	5.5E-03		
				Antimony	1.3E+01	mg/kg	7.2E-07	mg/kg-day	--	--	--	5.6E-06	mg/kg-day	4.0E-04	mg/kg-day	1.4E-02		
				Arsenic	2.2E+01	mg/kg	1.3E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.9E-06	9.8E-06	mg/kg-day	3.0E-04	mg/kg-day	3.3E-02		
				Barium	2.0E+03	mg/kg	1.1E-04	mg/kg-day	--	--	--	8.7E-04	mg/kg-day	2.0E-01	mg/kg-day	4.4E-03		
				Beryllium	3.8E+00	mg/kg	2.1E-07	mg/kg-day	--	--	--	1.7E-06	mg/kg-day	2.0E-03	mg/kg-day	8.4E-04		
				Cadmium	3.8E+00	mg/kg	2.2E-07	mg/kg-day	--	--	--	1.7E-06	mg/kg-day	1.0E-03	mg/kg-day	1.7E-03		
				Chromium, Hexavalent	2.9E+00	mg/kg	1.6E-07	mg/kg-day	5.0E-01	1/(mg/kg-day)	8.1E-08	1.3E-06	mg/kg-day	3.0E-03	mg/kg-day	4.2E-04		
				Cobalt	6.1E+01	mg/kg	3.5E-06	mg/kg-day	--	--	--	2.7E-05	mg/kg-day	3.0E-04	mg/kg-day	8.9E-02		
				Copper	1.7E+03	mg/kg	9.9E-05	mg/kg-day	--	--	--	7.7E-04	mg/kg-day	4.0E-02	mg/kg-day	1.9E-02		
				Iron	6.3E+04	mg/kg	3.6E-03	mg/kg-day	--	--	--	2.8E-02	mg/kg-day	7.0E-01	mg/kg-day	4.0E-02		
				Lead	6.0E+02	mg/kg	3.4E-05	mg/kg-day	--	--	--	2.6E-04	mg/kg-day	--	--	--		
				Manganese	7.8E+02	mg/kg	4.4E-05	mg/kg-day	--	--	--	3.4E-04	mg/kg-day	2.4E-02	mg/kg-day	1.4E-02		
				Mercury (elemental)	1.2E+02	mg/kg	6.9E-06	mg/kg-day	--	--	--	5.4E-05	mg/kg-day	1.6E-04	mg/kg-day	3.4E-01		
				Mercury (inorganic)	1.1E+03	mg/kg	6.2E-05	mg/kg-day	--	--	--	4.9E-04	mg/kg-day	3.0E-04	mg/kg-day	1.6E+00		
				Nickel	1.5E+02	mg/kg	8.4E-06	mg/kg-day	--	--	--	6.5E-05	mg/kg-day	2.0E-02	mg/kg-day	3.3E-03		
				Silver	2.3E+00	mg/kg	1.3E-07	mg/kg-day	--	--	--	1.0E-06	mg/kg-day	5.0E-03	mg/kg-day	2.0E-04		
				Vanadium	5.1E+01	mg/kg	2.9E-06	mg/kg-day	--	--	--	2.2E-05	mg/kg-day	7.0E-05	mg/kg-day	3.2E-01		
				Zinc	1.3E+04	mg/kg	7.6E-04	mg/kg-day	--	--	--	5.9E-03	mg/kg-day	3.0E-01	mg/kg-day	2.0E-02		
				Total PCBs	4.0E+00	mg/kg	2.2E-07	mg/kg-day	2.0E+00	1/(mg/kg-day)	4.5E-07	1.7E-06	mg/kg-day	2.0E-05	mg/kg-day	8.7E-02		
				Dioxin 2,3,7,8-TCDD TEQ	1.2E-05	mg/kg	6.9E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	8.9E-08	5.3E-12	mg/kg-day	1.0E-09	mg/kg-day	5.3E-03		
				Furan 2,3,7,8-TCDD TEQ	4.4E-04	mg/kg	2.5E-11	mg/kg-day	1.3E+05	1/(mg/kg-day)	3.3E-06	2.0E-10	mg/kg-day	1.0E-09	mg/kg-day	2.0E-01		
				Benzo(a)pyrene TEQ	4.2E+00	mg/kg	2.4E-07	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.7E-06	1.8E-06	mg/kg-day	--	--	--		
				Bis(2-ethylhexyl) phthalate	4.1E+00	mg/kg	2.3E-07	mg/kg-day	1.4E-02	1/(mg/kg-day)	3.2E-09	1.8E-06	mg/kg-day	2.0E-02	mg/kg-day	9.0E-05		
				Dibenzofuran	6.7E-01	mg/kg	3.8E-08	mg/kg-day	--	--	--	2.9E-07	mg/kg-day	1.0E-03	mg/kg-day	2.9E-04		
				Dichlorobenzene, 1,4-	1.4E-01	mg/kg	8.2E-09	mg/kg-day	5.4E-03	1/(mg/kg-day)	4.4E-11	6.3E-08	mg/kg-day	7.0E-02	mg/kg-day	9.1E-07		
				Hexachlorobenzene	5.7E+01	mg/kg	3.2E-06	mg/kg-day	1.6E+00	1/(mg/kg-day)	5.2E-06	2.5E-05	mg/kg-day	8.0E-04	mg/kg-day	3.1E-02		
				Hexachlorobutadiene	2.0E+00	mg/kg	1.1E-07	mg/kg-day	7.8E-02	1/(mg/kg-day)	8.7E-09	8.7E-07	mg/kg-day	1.0E-03	mg/kg-day	8.7E-04		
				Naphthalene	9.5E-01	mg/kg	5.4E-08	mg/kg-day	--	--	--	4.2E-07	mg/kg-day	2.0E-02	mg/kg-day	2.1E-05		
				Benzene	5.2E-01	mg/kg	2.9E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	1.6E-09	2.3E-07	mg/kg-day	4.0E-03	mg/kg-day	5.7E-05		
				Chloroform	3.3E-01	mg/kg	1.9E-08	mg/kg-day	3.1E-02	1/(mg/kg-day)	5.8E-10	1.4E-07	mg/kg-day	1.0E-02	mg/kg-day	1.4E-05		
				Tetrachloroethylene (PCE)	3.5E-02	mg/kg	2.0E-09	mg/kg-day	5.4E-01	1/(mg/kg-day)	1.1E-09	1.5E-08	mg/kg-day	1.0E-02	mg/kg-day	1.5E-06		
				Trichloroethylene (TCE)	2.8E+00	mg/kg	1.6E-07	mg/kg-day	5.9E-03	1/(mg/kg-day)	9.4E-10	1.2E-06	mg/kg-day	--	--	--		
				Vinyl Chloride	1.0E-02	mg/kg	5.7E-10	mg/kg-day	7.2E-01	1/(mg/kg-day)	4.1E-10	4.4E-09	mg/kg-day	3.0E-03	mg/kg-day	1.5E-06		
Route Total											1.3E-05					2.8E+00		
Dermal Contact	Dermal Contact	Dermal Contact	Dermal Contact	Aluminum	1.2E+04	mg/kg	--	--	--	--	--	--	1.0E+00	mg/kg-day	--			
				Antimony	1.3E+01	mg/kg	--	--	--	--	--	--	6.0E-05	mg/kg-day	--			
				Arsenic	2.2E+01	mg/kg	5.0E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	7.5E-07	3.9E-06	mg/kg-day	3.0E-04	mg/kg-day	1.3E-02		
				Barium	2.0E+03	mg/kg	--	--	--	--	--	--	1.4E-02	mg/kg-day	--			
				Beryllium	3.8E+00	mg/kg	--	--	--	--	--	--	1.4E-05	mg/kg-day	--			
				Cadmium	3.8E+00	mg/kg	--	--	--	--	--	2.2E-08	mg/kg-day	2.5E-05	mg/kg-day	8.9E-04		
				Chromium, Hexavalent	2.9E+00	mg/kg	--	--	2.0E+01	1/(mg/kg-day)	--	--	--	7.5E-05	mg/kg-day	--		
				Cobalt	6.1E+01	mg/kg	--	--	--	--	--	--	3.0E-04	mg/kg-day	--			
				Copper	1.7E+03	mg/kg	--	--	--	--	--	--	4.0E-02	mg/kg-day	--			
				Iron	6.3E+04	mg/kg	--	--	--	--	--	--	7.0E-01	mg/kg-day	--			
				Lead	6.0E+02	mg/kg	--	--	--	--	--	--	--	--	--			
				Manganese	7.8E+02	mg/kg	--	--	--	--	--	--	9.6E-04	mg/kg-day	--			
				Mercury (elemental)	1.2E+02	mg/kg	--	--	--	--	--	--	1.6E-04	mg/kg-day	--			
				Mercury (inorganic)	1.1E+03	mg/kg	--	--	--	--	--	--	2.1E-05	mg/kg-day	--			
				Nickel	1.5E+02	mg/kg	--	--	--	--	--	--	8.0E-04	mg/kg-day	--			
				Silver	2.3E+00	mg/kg	--	--	--	--	--	--	2.0E-04	mg/kg-day	--			
				Vanadium	5.1E+01	mg/kg	--	--	--	--	--	--	1.8E-06	mg/kg-day	--			
				Zinc	1.3E+04	mg/kg	--	--	--	--	--	--	3.0E-01	mg/kg-day	--			
				Total PCBs	4.0E+00	mg/kg	4.2E-07	mg/kg-day	2.0E+00	1/(mg/kg-day)	8.3E-07	3.2E-06	mg/kg-day	2.0E-05	mg/kg-day	1.6E-01		

**TABLE 7.1.CTE**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL AND GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (CTE)
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				Non-Cancer Hazard Calculations								
					Value	Units	Intake		CSF		Cancer Risk	Intake	Units	RfD	Hazard Quotient				
							Value	Units	Value	Units									
Surface Soil (0 to 2 ft bgs) (continued)	Surface Soil (0 to 2 ft bgs) (continued)	Surface Soil Contact (continued)	Dermal (continued)	Dioxin 2,3,7,8-TCDD TEQ	1.2E-05	mg/kg	2.7E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	3.5E-08	2.1E-12	mg/kg-day	1.0E-09	mg/kg-day	2.1E-03			
				Furan 2,3,7,8-TCDD TEQ	4.4E-04	mg/kg	9.9E-12	mg/kg-day	1.3E+05	1/(mg/kg-day)	1.3E-06	7.7E-11	mg/kg-day	1.0E-09	mg/kg-day	7.7E-02			
				Benz(a)pyrene TEQ	4.2E+00	mg/kg	4.0E-07	mg/kg-day	7.3E+00	1/(mg/kg-day)	2.9E-06	--	--	--	--	--			
				Bis(2-ethylhexyl) phthalate	4.1E+00	mg/kg	3.0E-07	mg/kg-day	1.4E-02	1/(mg/kg-day)	4.3E-09	2.4E-06	mg/kg-day	2.0E-02	mg/kg-day	1.2E-04			
				Dibenzofuran	6.7E-01	mg/kg	--	--	--	--	--	--	--	1.0E-03	mg/kg-day	--			
				Dichlorobenzene, 1,4-	1.4E-01	mg/kg	--	--	5.4E-03	1/(mg/kg-day)	--	--	--	7.0E-02	mg/kg-day	--			
				Hexachlorobenzene	5.7E+01	mg/kg	4.3E-06	mg/kg-day	1.6E+00	1/(mg/kg-day)	6.8E-06	3.3E-05	mg/kg-day	8.0E-04	mg/kg-day	4.2E-02			
				Hexachlorobutadiene	2.0E+00	mg/kg	1.5E-07	mg/kg-day	7.8E-02	1/(mg/kg-day)	1.1E-08	1.1E-06	mg/kg-day	1.0E-03	mg/kg-day	1.1E-03			
				Naphthalene	9.5E-01	mg/kg	--	--	--	--	--	7.2E-07	mg/kg-day	2.0E-02	mg/kg-day	3.6E-05			
				Benzene	5.2E-01	mg/kg	--	--	5.5E-02	1/(mg/kg-day)	--	--	--	4.0E-03	mg/kg-day	--			
				Chloroform	3.3E-01	mg/kg	--	--	3.1E-02	1/(mg/kg-day)	--	--	--	1.0E-02	mg/kg-day	--			
				Tetrachloroethylene (PCE)	3.5E-02	mg/kg	--	--	5.4E-01	1/(mg/kg-day)	--	--	--	1.0E-02	mg/kg-day	--			
				Trichloroethylene (TCE)	2.8E+00	mg/kg	--	--	5.9E-03	1/(mg/kg-day)	--	--	--	--	--	--			
				Vinyl Chloride	1.0E-02	mg/kg	--	--	7.2E-01	1/(mg/kg-day)	--	--	--	3.0E-03	mg/kg-day	--			
				Route Total							1.3E-05					3.0E-01			
Exposure Medium Total										2.5E-05						3.1E+00			
Outdoor Air	Pariculates/ Vapors in Outdoor Air	Inhalation		Aluminum	1.2E+04	mg/kg	4.9E-04	µg/m³	--	1/(µg/m³)	--	3.8E-06	mg/m³	5.0E-03	mg/m³	7.6E-04			
				Antimony	1.3E+01	mg/kg	5.0E-07	µg/m³	--	1/(µg/m³)	--	3.9E-09	mg/m³	--	mg/m³	--			
				Arsenic	2.2E+01	mg/kg	8.7E-07	µg/m³	4.3E-03	1/(µg/m³)	3.7E-09	6.8E-09	mg/m³	1.5E-05	mg/m³	4.5E-04			
				Barium	2.0E+03	mg/kg	7.8E-05	µg/m³	--	1/(µg/m³)	--	6.0E-07	mg/m³	5.0E-04	mg/m³	1.2E-03			
				Beryllium	3.8E+00	mg/kg	1.5E-07	µg/m³	2.4E-03	1/(µg/m³)	3.6E-10	1.2E-09	mg/m³	2.0E-05	mg/m³	5.8E-05			
				Cadmium	3.8E+00	mg/kg	1.5E-07	µg/m³	1.8E-03	1/(µg/m³)	2.7E-10	1.2E-09	mg/m³	1.0E-05	mg/m³	1.2E-04			
				Chromium, Hexavalent	2.9E+00	mg/kg	1.1E-07	µg/m³	8.4E-02	1/(µg/m³)	9.4E-09	8.7E-10	mg/m³	1.0E-04	mg/m³	8.7E-06			
				Cobalt	6.1E+01	mg/kg	2.4E-06	µg/m³	9.0E-03	1/(µg/m³)	2.1E-08	1.9E-08	mg/m³	6.0E-06	mg/m³	3.1E-03			
				Copper	1.7E+03	mg/kg	6.8E-05	µg/m³	--	1/(µg/m³)	--	5.3E-07	mg/m³	--	mg/m³	--			
				Iron	6.3E+04	mg/kg	2.5E-03	µg/m³	--	1/(µg/m³)	--	1.9E-05	mg/m³	--	mg/m³	--			
				Lead	6.0E+02	mg/kg	2.3E-05	µg/m³	--	1/(µg/m³)	--	1.8E-07	mg/m³	--	mg/m³	--			
				Manganese	7.8E+02	mg/kg	3.0E-05	µg/m³	--	1/(µg/m³)	--	2.4E-07	mg/m³	5.0E-05	mg/m³	4.7E-03			
				Mercury (elemental)	1.2E+02	mg/kg	4.8E-06	µg/m³	--	1/(µg/m³)	--	1.1E-03	mg/m³	3.0E-04	mg/m³	3.8E+00			
				Mercury (inorganic)	1.1E+03	mg/kg	4.3E-05	µg/m³	--	1/(µg/m³)	--	3.4E-07	mg/m³	3.0E-05	mg/m³	1.1E-02			
				Nickel	1.5E+02	mg/kg	5.8E-06	µg/m³	2.6E-04	1/(µg/m³)	1.5E-09	4.5E-08	mg/m³	9.0E-05	mg/m³	5.0E-04			
				Silver	2.3E+00	mg/kg	9.0E-08	µg/m³	--	1/(µg/m³)	--	7.0E-10	mg/m³	--	mg/m³	--			
				Vanadium	5.1E+01	mg/kg	2.0E-06	µg/m³	--	1/(µg/m³)	--	1.5E-08	mg/m³	1.0E-04	mg/m³	1.5E-04			
				Zinc	1.3E+04	mg/kg	5.2E-04	µg/m³	--	1/(µg/m³)	--	4.1E-06	mg/m³	--	mg/m³	--			
				Total PCBs	4.0E+00	mg/kg	1.6E-07	µg/m³	5.7E-04	1/(µg/m³)	8.8E-11	1.2E-09	mg/m³	--	mg/m³	--			
				Dioxin 2,3,7,8-TCDD TEQ	1.2E-05	mg/kg	4.7E-13	µg/m³	3.8E+01	1/(µg/m³)	1.8E-11	3.7E-15	mg/m³	4.0E-08	mg/m³	9.2E-08			
				Furan 2,3,7,8-TCDD TEQ	4.4E-04	mg/kg	1.7E-11	µg/m³	3.8E+01	1/(µg/m³)	6.6E-10	1.3E-13	mg/m³	4.0E-08	mg/m³	3.4E-06			
				Benz(a)pyrene TEQ	4.2E+00	mg/kg	1.6E-07	µg/m³	1.1E-03	1/(µg/m³)	1.8E-10	1.3E-09	mg/m³	--	mg/m³	--			
				Bis(2-ethylhexyl) phthalate	4.1E+00	mg/kg	1.6E-07	µg/m³	2.4E-06	1/(µg/m³)	3.8E-13	1.2E-09	mg/m³	--	mg/m³	--			
				Dibenzofuran	6.7E-01	mg/kg	2.6E-08	µg/m³	--	1/(µg/m³)	--	2.0E-10	mg/m³	--	mg/m³	--			
				Dichlorobenzene, 1,4-	1.4E-01	mg/kg	5.0E-04	µg/m³	1.1E-05	1/(µg/m³)	5.5E-09	3.9E-06	mg/m³	8.0E-01	mg/m³	4.8E-06			
				Hexachlorobenzene	5.7E+01	mg/kg	2.2E-06	µg/m³	4.6E-04	1/(µg/m³)	1.0E-09	1.7E-08	mg/m³	--	mg/m³	--			
				Hexachlorobutadiene	2.0E+00	mg/kg	7.7E-08	µg/m³	2.2E-05	1/(µg/m³)	1.7E-12	6.0E-10	mg/m³	--	mg/m³	--			
				Naphthalene	9.5E-01	mg/kg	7.4E-04	µg/m³	3.4E-05	1/(µg/m³)	2.5E-08	5.8E-06	mg/m³	3.0E-03	mg/m³	1.9E-03			
				Benzene	5.2E-01	mg/kg	5.3E-03	µg/m³	7.8E-06	1/(µg/m³)	4.1E-08	4.1E-05	mg/m³	3.0E-02	mg/m³	1.4E-03			
				Chloroform	3.3E-01	mg/kg	4.5E-03	µg/m³	2.3E-05	1/(µg/m³)	1.0E-07	3.5E-05	mg/m³	9.8E-02	mg/m³	3.6E-04			
				Tetrachloroethylene (PCE)	3.5E-02	mg/kg	5.3E-04	µg/m³	5.9E-06	1/(µg/m³)	3.1E-09	4.1E-06	mg/m³	2.7E-01	mg/m³	1.5E-05			
				Trichloroethylene (TCE)	2.8E+00	mg/kg	4.6E-02	µg/m³	2.0E-06	1/(µg/m³)	9.2E-08	8.6E-10	mg/m³	--	mg/m³	--			
				Vinyl Chloride	1.0E-02	mg/kg	3.8E-04	µg/m³	4.4E-06	1/(µg/m³)	1.7E-09	3.0E-06	mg/m³	1.0E-01	mg/m³	3.0E-05			
				Route Total							3.1E-07					3.8E+00			
Exposure Medium Total										3.1E-07						3.8E+00			
Surface Soil Total										2.6E-05						7.0E+00			

**TABLE 7.1.CTE**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL AND GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (CTE)
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations							
					Value	Units	Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient				
							Value	Units	Value	Units		Value	Units	Value	Units					
Groundwater	Overburden Groundwater	Potable Groundwater	Ingestion	Antimony	6.0E+00	µg/L	6.8E-06	mg/kg-day	--	--	--	5.3E-05	mg/kg-day	4.0E-04	mg/kg-day	1.3E-01				
				Arsenic	2.8E+02	µg/L	3.1E-04	mg/kg-day	1.5E+00	1/(mg/kg-day)	4.7E-04	2.4E-03	mg/kg-day	3.0E-04	mg/kg-day	8.1E+00				
				Barium	1.4E+04	µg/L	1.6E-02	mg/kg-day	--	--	--	1.3E-01	mg/kg-day	2.0E-01	mg/kg-day	6.3E-01				
				Cadmium	2.3E+01	µg/L	2.6E-05	mg/kg-day	--	--	--	2.0E-04	mg/kg-day	5.0E-04	mg/kg-day	4.0E-01				
				Cobalt	1.9E+02	µg/L	2.2E-04	mg/kg-day	--	--	--	1.7E-03	mg/kg-day	3.0E-04	mg/kg-day	5.6E+00				
Groundwater (continued)	Overburden Groundwater (continued)	Potable Groundwater (continued)	Ingestion	Iron	3.5E+05	µg/L	3.9E-01	mg/kg-day	--	--	--	3.0E+00	mg/kg-day	7.0E-01	mg/kg-day	4.4E+00				
				Manganese	2.2E+05	µg/L	2.5E-01	mg/kg-day	--	--	--	1.9E+00	mg/kg-day	2.4E-02	mg/kg-day	8.0E+01				
				Mercury	2.3E+02	µg/L	2.6E-04	mg/kg-day	--	--	--	2.1E-03	mg/kg-day	3.0E-04	mg/kg-day	6.8E+00				
				Methyl Mercury	1.7E+02	µg/L	1.9E-04	mg/kg-day	--	--	--	1.5E-03	mg/kg-day	1.0E-04	mg/kg-day	1.5E+01				
				Vanadium	1.4E+02	µg/L	1.5E-04	mg/kg-day	--	--	--	1.2E-03	mg/kg-day	7.0E-05	mg/kg-day	1.7E+01				
				Zinc	1.7E+03	µg/L	1.9E-03	mg/kg-day	--	--	--	1.5E-02	mg/kg-day	3.0E-01	mg/kg-day	5.0E-02				
				Cyanide	7.7E+01	µg/L	8.7E-05	mg/kg-day	--	--	--	6.8E-04	mg/kg-day	2.0E-02	mg/kg-day	3.4E-02				
				Dioxin 2,3,7,8-TCDD TEQ	1.9E-05	µg/L	2.2E-11	mg/kg-day	1.3E+05	1/(mg/kg-day)	2.8E-06	1.7E-10	mg/kg-day	1.0E-09	mg/kg-day	1.7E-01				
				Furan 2,3,7,8-TCDD TEQ	1.6E-04	µg/L	1.8E-10	mg/kg-day	1.3E+05	1/(mg/kg-day)	2.4E-05	1.4E-09	mg/kg-day	1.0E-09	mg/kg-day	1.4E+00				
				Benz(a)anthracene	7.8E-01	µg/L	8.8E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	6.4E-07	6.8E-06	mg/kg-day	--	--	--				
				Naphthalene	5.6E+02	µg/L	6.4E-04	mg/kg-day	--	--	--	4.9E-03	mg/kg-day	2.0E-02	mg/kg-day	2.5E-01				
				Carbazole	1.4E+02	µg/L	1.6E-04	mg/kg-day	2.0E-02	1/(mg/kg-day)	3.2E-06	1.3E-03	mg/kg-day	--	--	--				
				Chloroaniline, p-	4.5E+03	µg/L	5.0E-03	mg/kg-day	2.0E-01	1/(mg/kg-day)	1.0E-03	3.9E-02	mg/kg-day	4.0E-03	mg/kg-day	9.8E+00				
				Dibenzofuran	1.6E+01	µg/L	1.8E-05	mg/kg-day	--	--	--	1.4E-04	mg/kg-day	1.0E-03	mg/kg-day	1.4E+01				
				Dichlorobenzene, 1,2-	4.2E+03	µg/L	4.8E-03	mg/kg-day	--	--	--	3.7E-02	mg/kg-day	9.0E-02	mg/kg-day	4.1E-01				
				Dichlorobenzene, 1,3-	2.0E+02	µg/L	2.3E-04	mg/kg-day	--	--	--	1.8E-03	mg/kg-day	9.0E-02	mg/kg-day	1.9E-02				
				Dichlorobenzene, 1,4-	5.8E+02	µg/L	6.6E-04	mg/kg-day	5.4E-03	1/(mg/kg-day)	3.6E-06	5.1E-03	mg/kg-day	7.0E-02	mg/kg-day	7.3E-02				
				Hexachlorobenzene	1.0E+00	µg/L	1.1E-06	mg/kg-day	1.6E+00	1/(mg/kg-day)	1.8E-06	8.8E-06	mg/kg-day	8.0E-04	mg/kg-day	1.1E-02				
				Nitrobenzene	5.5E+01	µg/L	6.2E-05	mg/kg-day	--	--	--	4.8E-04	mg/kg-day	2.0E-03	mg/kg-day	2.4E-01				
				Dichlorophenol, 2,4-	1.2E+01	µg/L	1.3E-05	mg/kg-day	--	--	--	1.0E-04	mg/kg-day	3.0E-03	mg/kg-day	3.4E-02				
				Chlorophenol, 2-	2.6E+01	µg/L	3.0E-05	mg/kg-day	--	--	--	2.3E-04	mg/kg-day	5.0E-03	mg/kg-day	4.6E-02				
				Pentachlorophenol	1.9E+00	µg/L	2.1E-06	mg/kg-day	4.0E-01	1/(mg/kg-day)	8.5E-07	1.6E-05	mg/kg-day	5.0E-03	mg/kg-day	3.3E-03				
				Trichlorobenzene, 1,2,4-	2.9E+02	µg/L	3.2E-04	mg/kg-day	2.9E-02	1/(mg/kg-day)	9.4E-06	2.5E-03	mg/kg-day	1.0E-02	mg/kg-day	2.5E-01				
				Benzene	8.5E+02	µg/L	9.6E-04	mg/kg-day	5.5E-02	1/(mg/kg-day)	5.3E-05	7.5E-03	mg/kg-day	4.0E-03	mg/kg-day	1.9E+00				
				Chlorobenzene	1.6E+04	µg/L	1.8E-02	mg/kg-day	--	--	--	1.4E-01	mg/kg-day	2.0E-02	mg/kg-day	7.1E+00				
				Chloroform	3.5E+00	µg/L	4.0E-06	mg/kg-day	3.1E-02	1/(mg/kg-day)	1.2E-07	3.1E-05	mg/kg-day	1.0E-02	mg/kg-day	3.1E-03				
				Dichloroethane, 1,1-	2.6E+00	µg/L	2.9E-06	mg/kg-day	5.7E-03	1/(mg/kg-day)	1.7E-08	2.3E-05	mg/kg-day	2.0E-01	mg/kg-day	1.1E-04				
				Dichloroethane, 1,2-	1.8E+00	µg/L	2.0E-06	mg/kg-day	9.1E-02	1/(mg/kg-day)	1.9E-07	1.6E-05	mg/kg-day	2.0E-02	mg/kg-day	7.9E-04				
				Ethylbenzene	3.0E+01	µg/L	3.4E-05	mg/kg-day	1.1E-02	1/(mg/kg-day)	3.8E-07	2.7E-04	mg/kg-day	1.0E-01	mg/kg-day	2.7E-03				
				Methylene Chloride	2.0E+03	µg/L	2.2E-03	mg/kg-day	7.5E-03	1/(mg/kg-day)	1.7E-05	1.7E-02	mg/kg-day	6.0E-02	mg/kg-day	2.9E-01				
				Tetrachloroethylene (PCE)	6.9E+00	µg/L	7.8E-06	mg/kg-day	5.4E-01	1/(mg/kg-day)	4.2E-06	6.1E-05	mg/kg-day	1.0E-02	mg/kg-day	6.1E-03				
				Vinyl Chloride	7.1E-01	µg/L	8.0E-07	mg/kg-day	7.2E-01	1/(mg/kg-day)	5.8E-07	6.3E-06	mg/kg-day	3.0E-03	mg/kg-day	2.1E-03				
				Xylenes, Mixed	1.3E+02	µg/L	1.4E-04	mg/kg-day	--	--	--	1.1E-03	mg/kg-day	2.0E-01	mg/kg-day	5.6E-03				
Route Total											1.6E-03					1.6E+02				
Exposure Medium Total											1.6E-03					1.6E+02				
Groundwater Total											1.6E-03					1.6E+02				
Total of Receptor Risks Across All Media												1.6E-03	Total of Receptor Hazards Across All Media							

**Table 7.2.RME**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE SITE-SPECIFIC WORKER - SURFACE SOIL**  
**REASONABLE MAXIMUM EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

**Scenario Timeframe:** Future (RME)  
**Receptor Population:** Site-Specific Worker  
**Receptor Age:** Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				Non-Cancer Hazard Calculations						
					Value	Units	Intake		CSF		Cancer Risk	Intake	Value	Units			
							Value	Units	Value	Units							
Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs)	Ingestion	Aluminum	1.2E+04	mg/kg	1.7E-03	mg/kg-day	--	--	--	4.9E-03	mg/kg-day	1.0E+00	mg/kg-day	4.9E-03	
				Antimony	1.3E+01	mg/kg	1.8E-06	mg/kg-day	--	--	--	5.0E-06	mg/kg-day	4.0E-04	mg/kg-day	1.2E-02	
				Arsenic	2.2E+01	mg/kg	3.1E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	4.7E-06	8.7E-06	mg/kg-day	3.0E-04	mg/kg-day	2.9E-02	
				Barium	2.0E+03	mg/kg	2.8E-04	mg/kg-day	--	--	--	7.8E-04	mg/kg-day	2.0E-01	mg/kg-day	3.9E-03	
				Beryllium	3.8E+00	mg/kg	5.3E-07	mg/kg-day	--	--	--	1.5E-06	mg/kg-day	2.0E-03	mg/kg-day	7.4E-04	
				Cadmium	3.8E+00	mg/kg	5.3E-07	mg/kg-day	--	--	--	1.5E-06	mg/kg-day	1.0E-03	mg/kg-day	1.5E-03	
				Chromium, Hexavalent	2.9E+00	mg/kg	4.0E-07	mg/kg-day	5.0E-01	1/(mg/kg-day)	2.0E-07	1.1E-06	mg/kg-day	3.0E-03	mg/kg-day	3.7E-04	
				Cobalt	6.1E+01	mg/kg	8.5E-06	mg/kg-day	--	--	--	2.4E-05	mg/kg-day	3.0E-04	mg/kg-day	8.0E-02	
				Copper	1.7E+03	mg/kg	2.4E-04	mg/kg-day	--	--	--	6.8E-04	mg/kg-day	4.0E-02	mg/kg-day	1.7E-02	
				Iron	6.3E+04	mg/kg	8.8E-03	mg/kg-day	--	--	--	2.5E-02	mg/kg-day	7.0E-01	mg/kg-day	3.5E-02	
				Lead	6.0E+02	mg/kg	8.3E-05	mg/kg-day	--	--	--	2.3E-04	mg/kg-day	--	--	--	
				Manganese	7.8E+02	mg/kg	1.1E-04	mg/kg-day	--	--	--	3.0E-04	mg/kg-day	2.4E-02	mg/kg-day	1.3E-02	
				Mercury (elemental)	1.2E+02	mg/kg	1.7E-05	mg/kg-day	--	--	--	4.8E-05	mg/kg-day	1.6E-04	mg/kg-day	3.0E-01	
				Mercury (inorganic)	1.1E+03	mg/kg	1.5E-04	mg/kg-day	--	--	--	4.3E-04	mg/kg-day	3.0E-04	mg/kg-day	1.4E+00	
				Nickel	1.5E+02	mg/kg	2.1E-05	mg/kg-day	--	--	--	5.8E-05	mg/kg-day	2.0E-02	mg/kg-day	2.9E-03	
				Silver	2.3E+00	mg/kg	3.2E-07	mg/kg-day	--	--	--	9.0E-07	mg/kg-day	5.0E-03	mg/kg-day	1.8E-04	
				Vanadium	5.1E+01	mg/kg	7.1E-06	mg/kg-day	--	--	--	2.0E-05	mg/kg-day	7.0E-05	mg/kg-day	2.8E-01	
				Zinc	1.3E+04	mg/kg	1.9E-03	mg/kg-day	--	--	--	5.2E-03	mg/kg-day	3.0E-01	mg/kg-day	1.7E-02	
				Total PCBs	4.0E+00	mg/kg	5.5E-07	mg/kg-day	2.0E+00	1/(mg/kg-day)	1.1E-06	1.6E-06	mg/kg-day	2.0E-05	mg/kg-day	7.8E-02	
				Dioxin 2,3,7,8-TCDD TEQ	1.2E-05	mg/kg	1.7E-12	mg/kg-day	1.3E+05	1/(mg/kg-day)	2.2E-07	4.7E-12	mg/kg-day	1.0E-09	mg/kg-day	4.7E-03	
				Furan 2,3,7,8-TCDD TEQ	4.4E-04	mg/kg	6.2E-11	mg/kg-day	1.3E+05	1/(mg/kg-day)	8.1E-06	1.7E-10	mg/kg-day	1.0E-09	mg/kg-day	1.7E-01	
				Benzo(a)pyrene TEQ	4.2E+00	mg/kg	5.8E-07	mg/kg-day	7.3E+00	1/(mg/kg-day)	4.2E-06	1.6E-06	mg/kg-day	--	--	--	
				Bis(2-ethylhexyl) phthalate	4.1E+00	mg/kg	5.7E-07	mg/kg-day	1.4E-02	1/(mg/kg-day)	8.0E-09	1.6E-06	mg/kg-day	2.0E-02	mg/kg-day	8.0E-05	
				Dibenzofuran	6.7E-01	mg/kg	9.4E-08	mg/kg-day	--	--	--	2.6E-07	mg/kg-day	1.0E-03	mg/kg-day	2.6E-04	
				Dichlorobenzene, 1,4-	1.4E-01	mg/kg	2.0E-08	mg/kg-day	5.4E-03	1/(mg/kg-day)	1.1E-10	5.6E-08	mg/kg-day	7.0E-02	mg/kg-day	8.1E-07	
				Hexachlorobenzene	5.7E+01	mg/kg	8.0E-06	mg/kg-day	1.6E+00	1/(mg/kg-day)	1.3E-05	2.2E-05	mg/kg-day	8.0E-04	mg/kg-day	2.8E-02	
				Hexachlorobutadiene	2.0E+00	mg/kg	2.7E-07	mg/kg-day	7.8E-02	1/(mg/kg-day)	2.1E-08	7.7E-07	mg/kg-day	1.0E-03	mg/kg-day	7.7E-04	
				Naphthalene	9.5E-01	mg/kg	1.3E-07	mg/kg-day	--	--	--	3.7E-07	mg/kg-day	2.0E-02	mg/kg-day	1.9E-05	
				Benzene	5.2E-01	mg/kg	7.3E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	4.0E-09	2.0E-07	mg/kg-day	4.0E-03	mg/kg-day	5.1E-05	
				Chloroform	3.3E-01	mg/kg	4.6E-08	mg/kg-day	3.1E-02	1/(mg/kg-day)	1.4E-09	1.3E-07	mg/kg-day	1.0E-02	mg/kg-day	1.3E-05	
				Tetrachloroethylene (PCE)	3.5E-02	mg/kg	4.9E-09	mg/kg-day	5.4E-01	1/(mg/kg-day)	2.6E-09	1.4E-08	mg/kg-day	1.0E-02	mg/kg-day	1.4E-06	
				Trichloroethylene (TCE)	2.8E-00	mg/kg	4.0E-07	mg/kg-day	5.9E-03	1/(mg/kg-day)	2.3E-09	1.1E-06	mg/kg-day	--	--	--	
				Vinyl Chloride	1.0E-02	mg/kg	1.4E-09	mg/kg-day	7.2E-01	1/(mg/kg-day)	1.0E-09	4.0E-09	mg/kg-day	3.0E-03	mg/kg-day	1.3E-06	
				Route Total							3.1E-05				2.5E+00		
Dermal Contact				Aluminum	1.2E+04	mg/kg	--	--	--	--	--	1.0E+00	mg/kg-day	--	--	--	
				Antimony	1.3E+01	mg/kg	--	--	--	--	--	6.0E-05	mg/kg-day	--	--	--	
				Arsenic	2.2E+01	mg/kg	6.2E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	9.3E-07	1.7E-06	mg/kg-day	3.0E-04	mg/kg-day	5.8E-03	
				Barium	2.0E+03	mg/kg	--	--	--	--	--	1.4E-02	mg/kg-day	--	--	--	
				Beryllium	3.8E+00	mg/kg	--	--	--	--	--	1.4E-05	mg/kg-day	--	--	--	
				Cadmium	3.8E+00	mg/kg	--	--	--	--	--	2.5E-05	mg/kg-day	--	--	--	
				Chromium, Hexavalent	2.9E+00	mg/kg	--	--	2.0E+01	1/(mg/kg-day)	--	--	7.5E-05	mg/kg-day	--	--	--
				Cobalt	6.1E+01	mg/kg	--	--	--	--	--	3.0E-04	mg/kg-day	--	--	--	
				Copper	1.7E+03	mg/kg	--	--	--	--	--	4.0E-02	mg/kg-day	--	--	--	
				Iron	6.3E+04	mg/kg	--	--	--	--	--	7.0E-01	mg/kg-day	--	--	--	
				Lead	6.0E+02	mg/kg	--	--	--	--	--	--	--	--	--	--	
				Manganese	7.8E+02	mg/kg	--	--	--	--	--	9.6E-04	mg/kg-day	--	--	--	
				Mercury (elemental)	1.2E+02	mg/kg	--	--	--	--	--	1.6E-04	mg/kg-day	--	--	--	
				Mercury (inorganic)	1.1E+03	mg/kg	--	--	--	--	--	2.1E-05	mg/kg-day	--	--	--	
				Nickel	1.5E+02	mg/kg	--	--	--	--	--	8.0E-04	mg/kg-day	--	--	--	
				Silver	2.3E+00	mg/kg	--	--	--	--	--	2.0E-04	mg/kg-day	--	--	--	
				Vanadium	5.1E+01	mg/kg	--	--	--	--	--	1.8E-06	mg/kg-day	--	--	--	
				Zinc	1.3E+04	mg/kg	--	--	--	--	--	3.0E-01	mg/kg-day	--	--	--	
				Total PCBs	4.0E+00	mg/kg	5.1E-07	mg/kg-day	2.0E+00	1/(mg/kg-day)	1.0E-06	1.4E-06	mg/kg-day	2.0E-05	mg/kg-day	7.2E-02	
				Dioxin 2,3,7,8-TCDD TEQ	1.2E-05	mg/kg	3.4E-13	mg/kg/day	1.3E+05	1/(mg/kg-day)	4.4E-08	9.4E-13	mg/kg/day	1.0E-09	mg/kg/day	9.4E-04	
				Furan 2,3,7,8-TCDD TEQ	4.4E-04	mg/kg	1.2E-11	mg/kg-day	1.3E+05	1/(mg/kg-day)	1.6E-06	3.4E-11	mg/kg-day	1.0E-09	mg/kg/day	3.4E-02	
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	Benzo(a)pyrene TEQ	4.2E+00	mg/kg	5.0E-07	mg/kg-day	7.3E+00	1/(mg/kg-day)	3.6E-06	--	--	--	--	--	
				Bis(2-ethylhexyl) phthalate	4.1E+00	mg/kg	3.8E-07	mg/kg-day	1.4E-02	1/(mg/kg-day)	5.3E-09	1.1E-06	mg/kg-day	2.0E-02	mg/kg-day	5.3E-05	
				Dibenzofuran	6.7E-01	mg/kg	--	--	--	--	--	1.0E-03	mg/kg-day	--	--	--	
				Dichlorobenzene, 1,4-	1.4E-01	mg/kg	--	--	5.4E-03	1/(mg/kg-day)	--	--	7.0E-02	mg/kg-day	--	--	--

**Table 7.2.RME**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE SITE-SPECIFIC WORKER - SURFACE SOIL**  
**REASONABLE MAXIMUM EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Scenario Timeframe: Future (RME)
Receptor Population: Site-Specific Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				Non-Cancer Hazard Calculations							
					Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient				
					Value	Units	Value	Units		Value	Units	Value	Units					
(0 to 2 ft bgs) (continued)	(0 to 2 ft bgs) (continued)	(continued)		Hexachlorobenzene	5.7E+01	mg/kg	5.3E-06	mg/kg-day	1.6E+00	1/(mg/kg-day)	8.4E-06	1.5E-05	mg/kg-day	1.8E-02				
				Hexachlorobutadiene	2.0E+00	mg/kg	1.8E-07	mg/kg-day	7.8E-02	1/(mg/kg-day)	1.4E-08	5.1E-07	mg/kg-day	5.1E-04				
				Naphthalene	9.5E-01	mg/kg	--	--	--	--	--	3.2E-07	mg/kg-day	1.6E-05				
				Benzene	5.2E-01	mg/kg	--	--	5.5E-02	1/(mg/kg-day)	--	--	2.0E-02	mg/kg-day	--			
				Chloroform	3.3E-01	mg/kg	--	--	3.1E-02	1/(mg/kg-day)	--	--	4.0E-03	mg/kg-day	--			
				Tetrachloroethylene (PCE)	3.5E-02	mg/kg	--	--	5.4E-01	1/(mg/kg-day)	--	--	1.0E-02	mg/kg-day	--			
				Trichloroethylene (TCE)	2.8E+00	mg/kg	--	--	5.9E-03	1/(mg/kg-day)	--	--	--	mg/kg-day	--			
				Vinyl Chloride	1.0E-02	mg/kg	--	--	7.2E-01	1/(mg/kg-day)	--	--	3.0E-03	mg/kg-day	--			
				Route Total							1.6E-05				1.3E-01			
				Exposure Medium Total						4.7E-05					2.7E+00			
Outdoor Air	Particulates/Vapors in Outdoor Air	Inhalation		Aluminum	1.2E+04	mg/kg	6.0E-04	µg/m³	--	1/(µg/m³)	--	1.7E-06	mg/m³	5.0E-03	mg/m³	3.4E-04		
				Antimony	1.3E+01	mg/kg	6.1E-07	µg/m³	--	1/(µg/m³)	--	1.7E-09	mg/m³	--	mg/m³	--		
				Arsenic	2.2E+01	mg/kg	1.1E-06	µg/m³	4.3E-03	1/(µg/m³)	4.6E-09	3.0E-09	mg/m³	1.5E-05	mg/m³	2.0E-04		
				Barium	2.0E+03	mg/kg	9.6E-05	µg/m³	--	1/(µg/m³)	--	2.7E-07	mg/m³	5.0E-04	mg/m³	5.4E-04		
				Beryllium	3.8E+00	mg/kg	1.8E-07	µg/m³	2.4E-03	1/(µg/m³)	4.4E-10	5.1E-10	mg/m³	2.0E-05	mg/m³	2.6E-05		
				Cadmium	3.8E+00	mg/kg	1.8E-07	µg/m³	1.8E-03	1/(µg/m³)	3.3E-10	5.2E-10	mg/m³	1.0E-05	mg/m³	5.2E-05		
				Chromium, Hexavalent	2.9E+00	mg/kg	1.4E-07	µg/m³	8.4E-02	1/(µg/m³)	1.2E-08	3.9E-10	mg/m³	1.0E-04	mg/m³	3.9E-06		
				Cobalt	6.1E+01	mg/kg	2.9E-06	µg/m³	9.0E-03	1/(µg/m³)	2.6E-08	8.2E-09	mg/m³	6.0E-06	mg/m³	1.4E-03		
				Copper	1.7E+03	mg/kg	8.4E-05	µg/m³	--	1/(µg/m³)	--	2.4E-07	mg/m³	--	mg/m³	--		
				Iron	6.3E-04	mg/kg	3.0E-03	µg/m³	--	1/(µg/m³)	--	8.5E-06	mg/m³	--	mg/m³	--		
				Lead	6.0E+02	mg/kg	2.9E-05	µg/m³	--	1/(µg/m³)	--	8.1E-08	mg/m³	--	mg/m³	--		
				Manganese	7.8E+02	mg/kg	3.8E-05	µg/m³	--	1/(µg/m³)	--	1.1E-07	mg/m³	5.0E-05	mg/m³	2.1E-03		
				Mercury (elemental)	1.2E+02	mg/kg	5.9E-06	µg/m³	--	1/(µg/m³)	--	5.1E-04	mg/m³	3.0E-04	mg/m³	1.7E+00		
				Mercury (inorganic)	1.1E+03	mg/kg	5.3E-05	µg/m³	--	1/(µg/m³)	--	1.5E-07	mg/m³	3.0E-05	mg/m³	5.0E-03		
				Nickel	1.5E+02	mg/kg	7.2E-06	µg/m³	2.6E-04	1/(µg/m³)	1.9E-09	2.0E-08	mg/m³	9.0E-05	mg/m³	2.2E-04		
				Silver	2.3E-00	mg/kg	1.1E-07	µg/m³	--	1/(µg/m³)	--	3.1E-10	mg/m³	--	mg/m³	--		
				Vanadium	5.1E+01	mg/kg	2.4E-06	µg/m³	--	1/(µg/m³)	--	6.8E-09	mg/m³	1.0E-04	mg/m³	6.8E-05		
				Zinc	1.3E+04	mg/kg	6.5E-04	µg/m³	--	1/(µg/m³)	--	1.8E-06	mg/m³	--	mg/m³	--		
				Total PCBs	4.0E+00	mg/kg	1.9E-07	µg/m³	5.7E-04	1/(µg/m³)	1.1E-10	5.4E-10	mg/m³	--	mg/m³	--		
				Dioxin 2,3,7,8-TCDD TEQ	1.2E-05	mg/kg	5.8E-13	µg/m³	3.8E+01	1/(µg/m³)	2.2E-11	1.6E-15	mg/m³	4.0E-08	mg/m³	4.1E-08		
				Furan 2,3,7,8-TCDD TEQ	4.4E-04	mg/kg	2.1E-11	µg/m³	3.8E+01	1/(µg/m³)	8.1E-10	6.0E-14	mg/m³	4.0E-08	mg/m³	1.5E-06		
				Benz(a)pyrene TEQ	4.2E+00	mg/kg	2.0E-07	µg/m³	1.1E-03	1/(µg/m³)	2.2E-03	5.6E-10	mg/m³	--	mg/m³	--		
				Bis(2-ethylhexyl) phthalate	4.1E+00	mg/kg	2.0E-07	µg/m³	2.4E-06	1/(µg/m³)	4.7E-13	5.5E-10	mg/m³	--	mg/m³	--		
				Dibenzofuran	6.7E-01	mg/kg	3.2E-08	µg/m³	--	1/(µg/m³)	--	9.0E-11	mg/m³	--	mg/m³	--		
				Dichlorobenzene, 1,4-	1.4E-01	mg/kg	6.1E-04	µg/m³	1.1E-05	1/(µg/m³)	6.7E-09	1.7E-06	mg/m³	8.0E-01	mg/m³	2.1E-06		
				Hexachlorobenzene	5.7E+01	mg/kg	2.8E-06	µg/m³	4.6E-04	1/(µg/m³)	1.3E-09	7.7E-09	mg/m³	--	mg/m³	--		
				Hexachlorobutadiene	2.0E+00	mg/kg	9.5E-08	µg/m³	2.2E-05	1/(µg/m³)	2.1E-12	2.7E-10	mg/m³	--	mg/m³	--		
				Naphthalene	9.5E-01	mg/kg	9.1E-04	µg/m³	3.4E-05	1/(µg/m³)	3.1E-08	2.6E-06	mg/m³	3.0E-03	mg/m³	8.5E-04		
				Benzene	5.2E-01	mg/kg	6.5E-03	µg/m³	7.8E-06	1/(µg/m³)	5.1E-08	1.8E-05	mg/m³	3.0E-02	mg/m³	6.1E-04		
				Chloroform	3.3E-01	mg/kg	5.6E-03	µg/m³	2.3E-05	1/(µg/m³)	1.3E-07	1.6E-05	mg/m³	9.8E-02	mg/m³	1.6E-04		
				Tetrachloroethylene (PCE)	3.5E-02	mg/kg	6.6E-04	µg/m³	5.9E-06	1/(µg/m³)	3.9E-09	1.8E-06	mg/m³	2.7E-01	mg/m³	6.8E-06		
				Trichloroethylene (TCE)	2.8E+00	mg/kg	5.7E-02	µg/m³	2.0E-06	1/(µg/m³)	1.1E-07	3.8E-10	mg/m³	--	mg/m³	--		
				Vinyl Chloride	1.0E-02	mg/kg	4.7E-04	µg/m³	4.4E-06	1/(µg/m³)	2.1E-09	1.3E-06	mg/m³	1.0E-01	mg/m³	1.3E-05		
				Route Total							3.8E-07				1.7E+00			
				Exposure Medium Total							3.8E-07				1.7E+00			
Surface Soil Total											4.7E-05				4.4E+00			
Total of Receptor Risks Across All Media											4.7E-05				4.4E+00			

**Table 7.2.CTE**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE SITE-SPECIFIC WORKER - SURFACE SOIL**  
**CENTRAL TENDENCY EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Scenario Timeframe: Future (CTE)
Receptor Population: Site-Specific Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				Non-Cancer Hazard Calculations					
					Value	Units	Intake		CSF		Cancer Risk	Intake	RfD	Hazard Quotient		
							Value	Units	Value	Units						
Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs)	Ingestion	Aluminum	1.2E+04	mg/kg	1.6E-04	mg/kg-day	--	--	--	1.2E-03	mg/kg-day	1.0E+00	mg/kg-day	1.2E-03
				Antimony	1.3E+01	mg/kg	1.6E-07	mg/kg-day	--	--	--	1.2E-06	mg/kg-day	4.0E-04	mg/kg-day	3.1E-03
				Arsenic	2.2E+01	mg/kg	2.8E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	4.2E-07	2.2E-06	mg/kg-day	3.0E-04	mg/kg-day	7.3E-03
				Barium	2.0E+03	mg/kg	2.5E-05	mg/kg-day	--	--	--	1.9E-04	mg/kg-day	2.0E-01	mg/kg-day	9.7E-04
				Beryllium	3.8E+00	mg/kg	4.8E-08	mg/kg-day	--	--	--	3.7E-07	mg/kg-day	2.0E-03	mg/kg-day	1.9E-04
				Cadmium	3.8E+00	mg/kg	4.8E-08	mg/kg-day	--	--	--	3.7E-07	mg/kg-day	1.0E-03	mg/kg-day	3.7E-04
				Chromium, Hexavalent	2.9E+00	mg/kg	3.6E-08	mg/kg-day	5.0E-01	1/(mg/kg-day)	1.8E-08	2.8E-07	mg/kg-day	3.0E-03	mg/kg-day	9.3E-05
				Cobalt	6.1E+01	mg/kg	7.7E-07	mg/kg-day	--	--	--	6.0E-06	mg/kg-day	3.0E-04	mg/kg-day	2.0E-02
				Copper	1.7E+03	mg/kg	2.2E-05	mg/kg-day	--	--	--	1.7E-04	mg/kg-day	4.0E-02	mg/kg-day	4.3E-03
				Iron	6.3E+04	mg/kg	7.9E-04	mg/kg-day	--	--	--	6.2E-03	mg/kg-day	7.0E-01	mg/kg-day	8.8E-03
				Lead	6.0E+02	mg/kg	7.5E-06	mg/kg-day	--	--	--	5.8E-05	mg/kg-day	--	--	--
				Manganese	7.8E+02	mg/kg	9.8E-06	mg/kg-day	--	--	--	7.6E-05	mg/kg-day	2.4E-02	mg/kg-day	3.2E-03
				Mercury (elemental)	1.2E+02	mg/kg	1.5E-06	mg/kg-day	--	--	--	1.2E-05	mg/kg-day	1.6E-04	mg/kg-day	7.5E-02
				Mercury (inorganic)	1.1E+03	mg/kg	1.4E-05	mg/kg-day	--	--	--	1.1E-04	mg/kg-day	3.0E-04	mg/kg-day	3.6E-01
				Nickel	1.5E+02	mg/kg	1.9E-06	mg/kg-day	--	--	--	1.5E-05	mg/kg-day	2.0E-02	mg/kg-day	7.3E-04
				Silver	2.3E+00	mg/kg	2.9E-08	mg/kg-day	--	--	--	2.3E-07	mg/kg-day	5.0E-03	mg/kg-day	4.5E-05
				Vanadium	5.1E+01	mg/kg	6.4E-07	mg/kg-day	--	--	--	4.9E-06	mg/kg-day	7.0E-05	mg/kg-day	7.1E-02
				Zinc	1.3E+04	mg/kg	1.7E-04	mg/kg-day	--	--	--	1.3E-03	mg/kg-day	3.0E-01	mg/kg-day	4.4E-03
				Total PCBs	4.0E+00	mg/kg	5.0E-08	mg/kg-day	2.0E+00	1/(mg/kg-day)	1.0E-07	3.9E-07	mg/kg-day	2.0E-05	mg/kg-day	1.9E-02
				Dioxin 2,3,7,8-TCDD TEQ	1.2E-05	mg/kg	1.5E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	2.0E-08	1.2E-12	mg/kg-day	1.0E-09	mg/kg-day	1.2E-03
				Furan 2,3,7,8-TCDD TEQ	4.4E-04	mg/kg	5.6E-12	mg/kg-day	1.3E+05	1/(mg/kg-day)	7.2E-07	4.3E-11	mg/kg-day	--	--	--
				Benzo(a)pyrene TEQ	4.2E+00	mg/kg	5.2E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	3.8E-07	4.1E-07	mg/kg-day	--	--	--
				Bis(2-ethylhexyl) phthalate	4.1E+00	mg/kg	5.1E-08	mg/kg-day	1.4E-02	1/(mg/kg-day)	7.2E-10	4.0E-07	mg/kg-day	2.0E-02	mg/kg-day	2.0E-05
				Dibenzofuran	6.7E-01	mg/kg	8.4E-09	mg/kg-day	--	--	--	6.5E-08	mg/kg-day	1.0E-03	mg/kg-day	6.5E-05
				Dichlorobenzene, 1,4-	1.4E-01	mg/kg	1.8E-09	mg/kg-day	5.4E-03	1/(mg/kg-day)	9.8E-12	1.4E-08	mg/kg-day	7.0E-02	mg/kg-day	2.0E-07
				Hexachlorobenzene	5.7E+01	mg/kg	7.2E-07	mg/kg-day	1.6E+00	1/(mg/kg-day)	1.2E-06	5.6E-06	mg/kg-day	8.0E-04	mg/kg-day	7.0E-03
				Hexachlorobutadiene	2.0E+00	mg/kg	2.5E-08	mg/kg-day	7.8E-02	1/(mg/kg-day)	1.9E-09	1.9E-07	mg/kg-day	1.0E-03	mg/kg-day	1.9E-04
				Naphthalene	9.5E-01	mg/kg	1.2E-08	mg/kg-day	--	--	--	9.3E-08	mg/kg-day	2.0E-02	mg/kg-day	4.7E-06
				Benzene	5.2E-01	mg/kg	6.5E-09	mg/kg-day	5.5E-02	1/(mg/kg-day)	3.6E-10	5.1E-08	mg/kg-day	4.0E-03	mg/kg-day	1.3E-05
				Chloroform	3.3E-01	mg/kg	4.1E-09	mg/kg-day	3.1E-02	1/(mg/kg-day)	1.3E-10	3.2E-08	mg/kg-day	1.0E-02	mg/kg-day	3.2E-06
				Tetrachloroethylene (PCE)	3.5E-02	mg/kg	4.4E-10	mg/kg-day	5.4E-01	1/(mg/kg-day)	2.4E-10	3.4E-09	mg/kg-day	1.0E-02	mg/kg-day	3.4E-07
				Trichloroethylene (TCE)	2.8E-00	mg/kg	3.6E-08	mg/kg-day	5.9E-03	1/(mg/kg-day)	2.1E-10	2.8E-07	mg/kg-day	--	--	--
				Vinyl Chloride	1.0E-02	mg/kg	1.3E-10	mg/kg-day	7.2E-01	1/(mg/kg-day)	9.1E-11	9.9E-10	mg/kg-day	3.0E-03	mg/kg-day	3.3E-07
				Route Total							2.8E-06				6.3E-01	
Dermal Contact				Aluminum	1.2E+04	mg/kg	--	--	--	--	--	--	1.0E+00	mg/kg-day	--	--
				Antimony	1.3E+01	mg/kg	--	--	--	--	--	--	6.0E-05	mg/kg-day	--	--
				Arsenic	2.2E+01	mg/kg	1.1E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.7E-07	8.6E-07	mg/kg-day	3.0E-04	mg/kg-day	2.9E-03
				Barium	2.0E+03	mg/kg	--	--	--	--	--	--	1.4E-02	mg/kg-day	--	--
				Beryllium	3.8E+00	mg/kg	--	--	--	--	--	--	1.4E-05	mg/kg-day	--	--
				Cadmium	3.8E+00	mg/kg	--	--	--	--	--	--	2.5E-05	mg/kg-day	--	2.0E-04
				Chromium, Hexavalent	2.9E+00	mg/kg	--	--	2.0E+01	1/(mg/kg-day)	--	--	--	7.5E-05	mg/kg-day	--
				Cobalt	6.1E+01	mg/kg	--	--	--	--	--	--	3.0E-04	mg/kg-day	--	--
				Copper	1.7E+03	mg/kg	--	--	--	--	--	--	4.0E-02	mg/kg-day	--	--
				Iron	6.3E+04	mg/kg	--	--	--	--	--	--	7.0E-01	mg/kg-day	--	--
				Lead	6.0E+02	mg/kg	--	--	--	--	--	--	--	--	--	--
				Manganese	7.8E+02	mg/kg	--	--	--	--	--	--	9.6E-04	mg/kg-day	--	--
				Mercury (elemental)	1.2E+02	mg/kg	--	--	--	--	--	--	1.6E-04	mg/kg-day	--	--
				Mercury (inorganic)	1.1E+03	mg/kg	--	--	--	--	--	--	2.1E-05	mg/kg-day	--	--
				Nickel	1.5E+02	mg/kg	--	--	--	--	--	--	8.0E-04	mg/kg-day	--	--
				Silver	2.3E+00	mg/kg	--	--	--	--	--	--	2.0E-04	mg/kg-day	--	--
				Vanadium	5.1E+01	mg/kg	--	--	--	--	--	--	1.8E-06	mg/kg-day	--	--
				Zinc	1.3E+04	mg/kg	--	--	--	--	--	--	3.0E-01	mg/kg-day	--	--
				Total PCBs	4.0E+00	mg/kg	9.2E-08	mg/kg-day	2.0E+00	1/(mg/kg-day)	1.8E-07	7.2E-07	mg/kg-day	2.0E-05	mg/kg-day	3.6E-02
				Dioxin 2,3,7,8-TCDD TEQ	1.2E-05	mg/kg	6.0E-14	mg/kg-day	1.3E+05	1/(mg/kg-day)	7.8E-09	4.7E-13	mg/kg-day	1.0E-09	mg/kg-day	4.7E-04
				Furan 2,3,7,8-TCDD TEQ	4.4E-04	mg/kg	2.2E-12	mg/kg-day	1.3E+05	1/(mg/kg-day)	2.9E-07	1.7E-11	mg/kg-day	1.0E-09	mg/kg-day	1.7E-02
Surface Soil	Surface Soil	Surface Soil	Dermal Contact	Benzo(a)pyrene TEQ	4.2E+00	mg/kg	9.0E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	6.5E-07	--	--	--	--	--
				Bis(2-ethylhexyl) phthalate	4.1E+00	mg/kg	6.8E-08	mg/kg-day	1.4E-02	1/(mg/kg-day)	9.5E-10	5.3E-07	mg/kg-day	2.0E-02	mg/kg-day	2.6E-05
				Dibenzofuran	6.7E-01	mg/kg	--	--	--	--	--	--	1.0E-03	mg/kg-day	--	--
				Dichlorobenzene, 1,4-	1.4E-01	mg/kg	--	--	5.4E-03	1/(mg/kg-day)	--	--	--	7.0E-02	mg/kg-day	--

**Table 7.2.CTE**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE SITE-SPECIFIC WORKER - SURFACE SOIL**  
**CENTRAL TENDENCY EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

**Scenario Timeframe:** Future (CTE)  
**Receptor Population:** Site-Specific Worker  
**Receptor Age:** Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations				Non-Cancer Hazard Calculations								
							Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient			
					Value	Units	Value	Units	Value	Units		Value	Units	Value	Units				
(0 to 2 ft bgs) (continued)	(0 to 2 ft bgs) (continued)	(continued)		Hexachlorobenzene	5.7E+01	mg/kg	9.5E-07	mg/kg-day	1.6E+00	1/(mg/kg-day)	1.5E-06	7.4E-06	mg/kg-day	8.0E-04	mg/kg-day	9.2E-03			
				Hexachlorobutadiene	2.0E+00	mg/kg	3.3E-08	mg/kg-day	7.8E-02	1/(mg/kg-day)	2.5E-09	2.5E-07	mg/kg-day	1.0E-03	mg/kg-day	2.5E-04			
				Naphthalene	9.5E-01	mg/kg	--	--	--	--	--	1.6E-07	mg/kg-day	2.0E-02	mg/kg-day	8.0E-06			
				Benzene	5.2E-01	mg/kg	--	--	5.5E-02	1/(mg/kg-day)	--	--	--	4.0E-03	mg/kg-day	--			
				Chloroform	3.3E-01	mg/kg	--	--	3.1E-02	1/(mg/kg-day)	--	--	--	1.0E-02	mg/kg-day	--			
				Tetrachloroethylene (PCE)	3.5E-02	mg/kg	--	--	5.4E-01	1/(mg/kg-day)	--	--	--	1.0E-02	mg/kg-day	--			
				Trichloroethylene (TCE)	2.8E+00	mg/kg	--	--	5.9E-03	1/(mg/kg-day)	--	--	--	--	mg/kg-day	--			
				Vinyl Chloride	1.0E-02	mg/kg	--	--	7.2E-01	1/(mg/kg-day)	--	--	--	3.0E-03	mg/kg-day	--			
				Route Total							2.8E-06					6.6E-02			
				Exposure Medium Total							5.6E-06					7.0E-01			
Outdoor Air	Particulates/Vapors in Outdoor Air	Inhalation		Aluminum	1.2E+04	mg/kg	1.1E-04	µg/m³	--	1/(µg/m³)	--	8.4E-07	mg/m³	5.0E-03	mg/m³	1.7E-04			
				Antimony	1.3E+01	mg/kg	1.1E-07	µg/m³	--	1/(µg/m³)	--	8.6E-10	mg/m³	--	mg/m³	--			
				Arsenic	2.2E+01	mg/kg	1.9E-07	µg/m³	4.3E-03	1/(µg/m³)	8.3E-10	1.5E-09	mg/m³	1.5E-05	mg/m³	1.0E-04			
				Barium	2.0E+03	mg/kg	1.7E-05	µg/m³	--	1/(µg/m³)	--	1.3E-07	mg/m³	5.0E-04	mg/m³	2.7E-04			
				Beryllium	3.8E+00	mg/kg	3.3E-08	µg/m³	2.4E-03	1/(µg/m³)	7.9E-11	2.6E-10	mg/m³	2.0E-05	mg/m³	1.3E-05			
				Cadmium	3.8E+00	mg/kg	3.3E-08	µg/m³	1.8E-03	1/(µg/m³)	6.0E-11	2.6E-10	mg/m³	1.0E-05	mg/m³	2.6E-05			
				Chromium, Hexavalent	2.9E+00	mg/kg	2.5E-08	µg/m³	8.4E-02	1/(µg/m³)	2.1E-09	1.9E-10	mg/m³	1.0E-04	mg/m³	1.9E-06			
				Cobalt	6.1E+01	mg/kg	5.3E-07	µg/m³	9.0E-03	1/(µg/m³)	4.8E-09	4.1E-09	mg/m³	6.0E-06	mg/m³	6.9E-04			
				Copper	1.7E+03	mg/kg	1.5E-05	µg/m³	--	1/(µg/m³)	--	1.2E-07	mg/m³	--	mg/m³	--			
				Iron	6.3E+04	mg/kg	5.5E-04	µg/m³	--	1/(µg/m³)	--	4.3E-06	mg/m³	--	mg/m³	--			
				Lead	6.0E+02	mg/kg	5.2E-06	µg/m³	--	1/(µg/m³)	--	4.0E-08	mg/m³	--	mg/m³	--			
				Manganese	7.8E+02	mg/kg	6.8E-06	µg/m³	--	1/(µg/m³)	--	5.3E-08	mg/m³	5.0E-05	mg/m³	1.1E-03			
				Mercury (elemental)	1.2E+02	mg/kg	1.1E-06	µg/m³	--	1/(µg/m³)	--	2.5E-04	mg/m³	3.0E-04	mg/m³	8.4E-01			
				Mercury (inorganic)	1.1E+03	mg/kg	9.6E-06	µg/m³	--	1/(µg/m³)	--	7.5E-08	mg/m³	3.0E-05	mg/m³	2.5E-03			
				Nickel	1.5E+02	mg/kg	1.3E-06	µg/m³	2.6E-04	1/(µg/m³)	3.4E-10	1.0E-08	mg/m³	9.0E-05	mg/m³	1.1E-04			
				Silver	2.3E+00	mg/kg	2.0E-08	µg/m³	--	1/(µg/m³)	--	1.6E-10	mg/m³	--	mg/m³	--			
				Vanadium	5.1E+01	mg/kg	4.4E-07	µg/m³	--	1/(µg/m³)	--	3.4E-09	mg/m³	1.0E-04	mg/m³	3.4E-05			
				Zinc	1.3E+04	mg/kg	1.2E-04	µg/m³	--	1/(µg/m³)	--	9.0E-07	mg/m³	--	mg/m³	--			
				Total PCBs	4.0E+00	mg/kg	3.4E-08	µg/m³	5.7E-04	1/(µg/m³)	2.0E-11	2.7E-10	mg/m³	--	mg/m³	--			
				Dioxin 2,3,7,8-TCDD TEQ	1.2E-05	mg/kg	1.1E-13	µg/m³	3.8E+01	1/(µg/m³)	4.0E-12	8.2E-16	mg/m³	4.0E-08	mg/m³	2.0E-08			
				Furan 2,3,7,8-TCDD TEQ	4.4E-04	mg/kg	3.9E-12	µg/m³	3.8E+01	1/(µg/m³)	1.5E-10	3.0E-14	mg/m³	4.0E-08	mg/m³	7.5E-07			
				Benz(a)pyrene TEQ	4.2E+00	mg/kg	3.6E-08	µg/m³	1.1E-03	1/(µg/m³)	4.0E-03	2.8E-10	mg/m³	--	mg/m³	--			
				Bis(2-ethylhexyl) phthalate	4.1E+00	mg/kg	3.5E-08	µg/m³	2.4E-06	1/(µg/m³)	8.5E-14	2.8E-10	mg/m³	--	mg/m³	--			
				Dibenzofuran	6.7E-01	mg/kg	5.8E-09	µg/m³	--	1/(µg/m³)	--	4.5E-11	mg/m³	--	mg/m³	--			
				Dichlorobenzene, 1,4-	1.4E-01	mg/kg	1.1E-04	µg/m³	1.1E-05	1/(µg/m³)	1.2E-09	8.6E-07	mg/m³	8.0E-01	mg/m³	1.1E-06			
				Hexachlorobenzene	5.7E+01	mg/kg	5.0E-07	µg/m³	4.6E-04	1/(µg/m³)	2.3E-10	3.9E-09	mg/m³	--	mg/m³	--			
				Hexachlorobutadiene	2.0E+00	mg/kg	1.7E-08	µg/m³	2.2E-05	1/(µg/m³)	3.8E-13	1.3E-10	mg/m³	--	mg/m³	--			
				Naphthalene	9.5E-01	mg/kg	1.6E-04	µg/m³	3.4E-05	1/(µg/m³)	5.6E-09	1.3E-06	mg/m³	3.0E-03	mg/m³	4.3E-04			
				Benzene	5.2E-01	mg/kg	1.2E-03	µg/m³	7.8E-06	1/(µg/m³)	9.2E-09	9.1E-06	mg/m³	3.0E-02	mg/m³	3.0E-04			
				Chloroform	3.3E-01	mg/kg	1.0E-03	µg/m³	2.3E-05	1/(µg/m³)	2.3E-08	7.8E-06	mg/m³	9.8E-02	mg/m³	7.9E-05			
				Tetrachloroethylene (PCE)	3.5E-02	mg/kg	1.2E-04	µg/m³	5.9E-06	1/(µg/m³)	7.0E-10	9.2E-07	mg/m³	2.7E-01	mg/m³	3.4E-06			
				Trichloroethylene (TCE)	2.8E+00	mg/kg	1.0E-02	µg/m³	2.0E-06	1/(µg/m³)	2.0E-08	1.9E-10	mg/m³	--	mg/m³	--			
				Vinyl Chloride	1.0E-02	mg/kg	8.5E-05	µg/m³	4.4E-06	1/(µg/m³)	3.7E-10	6.6E-07	mg/m³	1.0E-01	mg/m³	6.6E-06			
				Route Total							6.9E-08					8.5E-01			
Exposure Medium Total											6.9E-08					8.5E-01			
Surface Soil Total											5.7E-06					1.5E+00			
Total of Receptor Risks Across All Media												5.7E-06				Total of Receptor Hazards Across All Media	1.5E+00		

**Table 7.3.RME**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (RME)
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations					
					Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient				
					Value	Units	Value	Units		Value	Units	Value	Units					
Mixed Soil (0 to 10 ft bgs)	Mixed Soil (0 to 10 ft bgs)	Mixed Soil (0 to 10 ft bgs)	Ingestion	Aluminum	1.2E+04	mg/kg	2.9E-04	mg/kg-day	--	--	--	2.0E-02	mg/kg-day	1.0E+00	mg/kg-day	2.0E-02		
				Antimony	1.7E+01	mg/kg	4.2E-07	mg/kg-day	--	--	--	2.9E-05	mg/kg-day	4.0E-04	mg/kg-day	7.3E-02		
				Arsenic	4.1E+01	mg/kg	9.8E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.5E-06	6.9E-05	mg/kg-day	3.0E-04	mg/kg-day	2.3E-01		
				Barium	1.8E+03	mg/kg	4.3E-05	mg/kg-day	--	--	--	3.0E-03	mg/kg-day	2.0E-01	mg/kg-day	1.5E-02		
				Beryllium	3.3E+00	mg/kg	7.9E-08	mg/kg-day	--	--	--	5.5E-06	mg/kg-day	2.0E-03	mg/kg-day	2.8E-03		
				Cadmium	4.7E+00	mg/kg	1.1E-07	mg/kg-day	--	--	--	7.8E-06	mg/kg-day	1.0E-03	mg/kg-day	7.8E-03		
				Chromium, Hexavalent	2.4E+00	mg/kg	5.8E-08	mg/kg-day	5.0E-01	1/(mg/kg-day)	2.9E-08	4.1E-06	mg/kg-day	3.0E-03	mg/kg-day	1.4E-03		
				Cobalt	5.6E+01	mg/kg	1.3E-06	mg/kg-day	--	--	--	9.3E-05	mg/kg-day	3.0E-04	mg/kg-day	3.1E-01		
				Copper	1.6E+03	mg/kg	3.8E-05	mg/kg-day	--	--	--	2.7E-03	mg/kg-day	4.0E-02	mg/kg-day	6.7E-02		
				Iron	6.0E+04	mg/kg	1.4E-03	mg/kg-day	--	--	--	1.0E-01	mg/kg-day	7.0E-01	mg/kg-day	1.4E-01		
				Lead	6.6E+02	mg/kg	1.6E-05	mg/kg-day	--	--	--	1.1E-03	mg/kg-day	--	--	--		
				Manganese	7.2E+02	mg/kg	1.7E-05	mg/kg-day	--	--	--	1.2E-03	mg/kg-day	2.4E-02	mg/kg-day	5.0E-02		
				Mercury (elemental)	1.1E+02	mg/kg	2.7E-06	mg/kg-day	--	--	--	1.9E-04	mg/kg-day	1.6E-04	mg/kg-day	1.2E-00		
				Mercury (inorganic)	1.0E+03	mg/kg	2.5E-05	mg/kg-day	--	--	--	1.7E-03	mg/kg-day	3.0E-04	mg/kg-day	5.7E+00		
				Nickel	1.0E+02	mg/kg	2.4E-06	mg/kg-day	--	--	--	1.7E-04	mg/kg-day	2.0E-02	mg/kg-day	8.5E-03		
				Silver	2.1E+00	mg/kg	5.0E-08	mg/kg-day	--	--	--	3.5E-06	mg/kg-day	5.0E-03	mg/kg-day	7.0E-04		
				Vanadium	4.5E+01	mg/kg	1.1E-06	mg/kg-day	--	--	--	7.5E-05	mg/kg-day	7.0E-05	mg/kg-day	1.1E+00		
				Zinc	1.1E+04	mg/kg	2.7E-04	mg/kg-day	--	--	--	1.9E-02	mg/kg-day	3.0E-01	mg/kg-day	6.2E-02		
				Total PCBs	3.5E+00	mg/kg	8.3E-08	mg/kg-day	2.0E+00	1/(mg/kg-day)	1.7E-07	5.8E-06	mg/kg-day	2.0E-05	mg/kg-day	2.9E-01		
				Dioxin 2,3,7,8-TCDD TEQ	1.1E-05	mg/kg	2.7E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	3.6E-08	1.9E-11	mg/kg-day	1.0E-09	mg/kg-day	1.9E-02		
				Furan 2,3,7,8-TCDD TEQ	7.2E-04	mg/kg	1.7E-11	mg/kg-day	1.3E+05	1/(mg/kg-day)	2.3E-06	1.2E-09	mg/kg-day	1.0E-09	mg/kg-day	1.2E+00		
				Benzo(a)pyrene TEQ	2.3E+00	mg/kg	5.6E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	4.1E-07	3.9E-06	mg/kg-day	--	--	--		
				Methylnaphthalene, 2-	2.5E+00	mg/kg	5.9E-08	mg/kg-day	--	--	--	4.1E-06	mg/kg-day	4.0E-03	mg/kg-day	1.0E-03		
				Chloroaniline, p-	1.3E-01	mg/kg	3.1E-09	mg/kg-day	2.0E-01	1/(mg/kg-day)	6.2E-10	2.2E-07	mg/kg-day	4.0E-03	mg/kg-day	5.4E-05		
				Naphthalene	4.7E+00	mg/kg	1.1E-07	mg/kg-day	--	--	--	7.8E-06	mg/kg-day	2.0E-02	mg/kg-day	3.9E-04		
				Phenanthrene	7.3E+00	mg/kg	1.8E-07	mg/kg-day	--	--	--	1.2E-05	mg/kg-day	3.0E-02	mg/kg-day	4.1E-04		
				Bis(2-ethylhexyl) phthalate	3.8E+00	mg/kg	9.1E-08	mg/kg-day	1.4E-02	1/(mg/kg-day)	1.3E-09	6.3E-06	mg/kg-day	2.0E-02	mg/kg-day	3.2E-04		
				Dibenzofuran	2.3E+00	mg/kg	5.4E-08	mg/kg-day	--	--	--	3.8E-06	mg/kg-day	1.0E-03	mg/kg-day	3.8E-03		
				Dichlorobenzene, 1,2-	1.0E+01	mg/kg	2.4E-07	mg/kg-day	--	--	--	1.7E-05	mg/kg-day	9.0E-02	mg/kg-day	1.9E-04		
				Dichlorobenzene, 1,4-	2.1E+00	mg/kg	5.1E-08	mg/kg-day	5.4E-03	1/(mg/kg-day)	2.8E-10	3.6E-06	mg/kg-day	7.0E-02	mg/kg-day	5.1E-05		
				Hexachlorobenzene	2.9E+01	mg/kg	7.1E-07	mg/kg-day	1.6E+00	1/(mg/kg-day)	1.1E-06	5.0E-05	mg/kg-day	8.0E-04	mg/kg-day	6.2E-02		
				Hexachlorobutadiene	4.9E+00	mg/kg	1.2E-07	mg/kg-day	7.8E-02	1/(mg/kg-day)	9.2E-09	8.3E-06	mg/kg-day	1.0E-03	mg/kg-day	8.3E-03		
				Trichlorobenzene, 1,2,4-	5.8E+01	mg/kg	1.4E-06	mg/kg-day	2.9E-02	1/(mg/kg-day)	4.0E-08	9.8E-05	mg/kg-day	1.0E-02	mg/kg-day	9.8E-03		
				Benzene	2.7E+00	mg/kg	6.4E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	3.5E-09	4.5E-06	mg/kg-day	4.0E-03	mg/kg-day	1.1E-03		
				Chlorobenzene	1.4E+00	mg/kg	3.3E-08	mg/kg-day	--	--	--	2.3E-06	mg/kg-day	2.0E-02	mg/kg-day	1.1E-04		
				Chloroform	9.0E-01	mg/kg	2.1E-08	mg/kg-day	3.1E-02	1/(mg/kg-day)	6.7E-10	1.5E-06	mg/kg-day	1.0E-02	mg/kg-day	1.5E-04		
				Ethylbenzene	2.7E-01	mg/kg	6.6E-09	mg/kg-day	1.1E-02	1/(mg/kg-day)	7.2E-11	4.6E-07	mg/kg-day	1.0E-01	mg/kg-day	4.6E-06		
				Methylene Chloride	1.2E+01	mg/kg	2.8E-07	mg/kg-day	7.5E-03	1/(mg/kg-day)	2.1E-09	2.0E-05	mg/kg-day	6.0E-02	mg/kg-day	3.3E-04		
				Tetrachloroethylene (PCE)	1.7E-01	mg/kg	4.2E-09	mg/kg-day	5.4E-01	1/(mg/kg-day)	2.3E-09	2.9E-07	mg/kg-day	1.0E-02	mg/kg-day	2.9E-05		
				Trichloroethylene (TCE)	3.8E+00	mg/kg	9.1E-08	mg/kg-day	5.9E-03	1/(mg/kg-day)	5.3E-10	6.3E-06	mg/kg-day	--	--	--		
				Vinyl Chloride	8.9E-03	mg/kg	2.1E-10	mg/kg-day	7.2E-01	1/(mg/kg-day)	1.5E-10	1.5E-08	mg/kg-day	3.0E-03	mg/kg-day	5.0E-06		
<b>Route Total</b>												<b>5.6E-06</b>				<b>1.1E+01</b>		
Dermal Contact				Aluminum	1.2E+04	mg/kg	--	--	--	--	--	--	--	--	--	--		
				Antimony	1.7E+01	mg/kg	--	--	--	--	--	--	6.0E-05	mg/kg-day	3.0E-04	mg/kg-day	2.1E-02	
				Arsenic	4.1E+01	mg/kg	8.9E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.3E-07	6.2E-06	mg/kg-day	3.0E-04	mg/kg-day	2.1E-02		
				Barium	1.8E+03	mg/kg	--	--	--	--	--	--	1.4E-02	mg/kg-day	--	--		
				Beryllium	3.3E+00	mg/kg	--	--	--	--	--	--	1.4E-05	mg/kg-day	--	--		

**Table 7.3.RME**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (RME)
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations							
					Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient					
					Value	Units	Value	Units		Value	Units	Value	Units						
Mixed Soil (0 to 10 ft bgs) (continued)	Mixed Soil (0 to 10 ft bgs) (continued)	Mixed Soil Contact (continued)	Dermal	Cadmium	4.7E+00	mg/kg	--	--	--	--	--	2.3E-08	mg/kg-day	2.5E-05	mg/kg-day	9.4E-04			
				Chromium, Hexavalent	2.4E+00	mg/kg	--	--	2.0E+01	1/(mg/kg-day)	--	--	--	7.5E-05	--	--			
				Cobalt	5.6E+01	mg/kg	--	--	--	--	--	--	--	3.0E-04	mg/kg-day	--			
				Copper	1.6E+03	mg/kg	--	--	--	--	--	--	--	4.0E-02	mg/kg-day	--			
				Iron	6.0E+04	mg/kg	--	--	--	--	--	--	--	7.0E-01	mg/kg-day	--			
				Lead	6.6E+02	mg/kg	--	--	--	--	--	--	--	--	--	--			
				Manganese	7.2E+02	mg/kg	--	--	--	--	--	--	--	9.6E-04	mg/kg-day	--			
				Mercury (elemental)	1.1E+02	mg/kg	--	--	--	--	--	--	--	1.6E-04	mg/kg-day	--			
				Mercury (inorganic)	1.0E+03	mg/kg	--	--	--	--	--	--	--	2.1E-05	mg/kg-day	--			
				Nickel	1.0E+02	mg/kg	--	--	--	--	--	--	--	8.0E-04	mg/kg-day	--			
				Silver	2.1E+00	mg/kg	--	--	--	--	--	--	--	2.0E-04	mg/kg-day	--			
				Vanadium	4.5E+01	mg/kg	--	--	--	--	--	--	--	1.8E-06	mg/kg-day	--			
				Zinc	1.1E+04	mg/kg	--	--	--	--	--	--	--	3.0E-01	mg/kg-day	--			
				Total PCBs	3.5E+00	mg/kg	3.5E-08	mg/kg-day	2.0E+00	1/(mg/kg-day)	7.0E-08	2.4E-06	mg/kg-day	2.0E-05	mg/kg-day	1.2E-01			
				Dioxin 2,3,7,8-TCDD TEQ	1.1E-05	mg/kg	2.5E-14	mg/kg-day	1.3E+05	1/(mg/kg-day)	3.2E-09	1.7E-12	mg/kg-day	1.0E-09	mg/kg-day	1.7E-03			
				Furan 2,3,7,8-TCDD TEQ	7.2E-04	mg/kg	1.6E-12	mg/kg-day	1.3E+05	1/(mg/kg-day)	2.0E-07	1.1E-10	mg/kg-day	1.0E-09	mg/kg-day	1.1E-01			
				Benzo(a)pyrene TEQ	2.3E+00	mg/kg	2.2E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.6E-07	--	--	--	--	--			
				Methylnaphthalene, 2-	2.5E+00	mg/kg	--	--	--	--	--	--	--	4.0E-03	mg/kg-day	--			
				Chloroaniline, p-	1.3E-01	mg/kg	9.3E-10	mg/kg-day	2.0E-01	1/(mg/kg-day)	1.9E-10	6.5E-08	mg/kg-day	4.0E-03	mg/kg-day	1.6E-05			
				Naphthalene	4.7E+00	mg/kg	--	--	--	--	--	--	--	3.0E-06	mg/kg-day	1.5E-04			
				Phenanthrene	7.3E+00	mg/kg	6.9E-08	mg/kg-day	--	--	--	4.8E-06	mg/kg-day	3.0E-02	mg/kg-day	1.6E-04			
				Bis(2-ethylhexyl) phthalate	3.8E+00	mg/kg	2.7E-08	mg/kg-day	1.4E-02	1/(mg/kg-day)	3.8E-10	1.9E-06	mg/kg-day	2.0E-02	mg/kg-day	9.5E-05			
				Dibenzofuran	2.3E+00	mg/kg	--	--	--	--	--	--	--	1.0E-03	mg/kg-day	--			
				Dichlorobenzene, 1,2-	1.0E+01	mg/kg	--	--	--	--	--	--	--	9.0E-02	mg/kg-day	--			
				Dichlorobenzene, 1,4-	2.1E+00	mg/kg	--	--	--	--	--	--	--	7.0E-02	mg/kg-day	--			
				Hexachlorobenzene	2.9E+01	mg/kg	2.1E-07	mg/kg-day	1.6E+00	1/(mg/kg-day)	3.4E-07	1.5E-05	mg/kg-day	8.0E-04	mg/kg-day	1.9E-02			
				Hexachlorobutadiene	4.9E+00	mg/kg	3.6E-08	mg/kg-day	7.8E-02	1/(mg/kg-day)	2.8E-09	2.5E-06	mg/kg-day	1.0E-03	mg/kg-day	2.5E-03			
				Trichlorobenzene, 1,2,4-	5.8E+01	mg/kg	--	--	--	--	--	--	--	1.0E-02	mg/kg-day	--			
				Benzene	2.7E+00	mg/kg	--	--	--	--	--	--	--	4.0E-03	mg/kg-day	--			
				Chlorobenzene	1.4E+00	mg/kg	--	--	--	--	--	--	--	2.0E-02	mg/kg-day	--			
				Chloroform	9.0E-01	mg/kg	--	--	--	--	--	--	--	1.0E-02	mg/kg-day	--			
				Ethylbenzene	2.7E-01	mg/kg	--	--	--	--	--	--	--	1.0E-01	mg/kg-day	--			
				Methylene Chloride	1.2E+01	mg/kg	--	--	--	--	--	--	--	6.0E-02	mg/kg-day	--			
				Tetrachloroethylene (PCE)	1.7E-01	mg/kg	--	--	--	--	--	--	--	1.0E-02	mg/kg-day	--			
				Trichloroethylene (TCE)	3.8E+00	mg/kg	--	--	--	--	--	--	--	--	--	--			
				Vinyl Chloride	8.9E-03	mg/kg	--	--	--	--	--	--	--	3.0E-03	mg/kg-day	--			
Route Total											9.1E-07					2.8E-01			
Exposure Medium Total											6.5E-06					1.1E+01			
Outdoor Air	Particulates/ Vapors in Outdoor Air	Inhalation		Aluminum	1.2E+04	mg/kg	3.0E-05	µg/m³	--	1/(µg/m³)	--	2.1E-06	mg/m³	5.0E-03	mg/m³	4.2E-04			
				Antimony	1.7E+01	mg/kg	4.4E-08	µg/m³	--	1/(µg/m³)	--	3.1E-09	mg/m³	--	mg/m³	--			
				Arsenic	4.1E+01	mg/kg	1.0E-07	µg/m³	4.3E-03	1/(µg/m³)	4.4E-10	7.2E-09	mg/m³	1.5E-05	mg/m³	4.8E-04			
				Barium	1.8E+03	mg/kg	4.5E-06	µg/m³	--	1/(µg/m³)	--	3.2E-07	mg/m³	5.0E-04	mg/m³	6.3E-04			
				Beryllium	3.3E+00	mg/kg	8.3E-09	µg/m³	2.4E-03	1/(µg/m³)	2.0E-11	5.8E-10	mg/m³	2.0E-05	mg/m³	2.9E-05			
				Cadmium	4.7E+00	mg/kg	1.2E-08	µg/m³	1.8E-03	1/(µg/m³)	2.1E-11	8.2E-10	mg/m³	1.0E-05	mg/m³	8.2E-05			
				Chromium, Hexavalent	2.4E+00	mg/kg	6.1E-09	µg/m³	8.4E-02	1/(µg/m³)	5.1E-10	4.2E-10	mg/m³	1.0E-04	mg/m³	4.2E-06			
				Cobalt	5.6E+01	mg/kg	1.4E-07	µg/m³	9.0E-03	1/(µg/m³)	1.3E-09	9.8E-09	mg/m³	6.0E-06	mg/m³	1.6E-03			
				Copper	1.6E+03	mg/kg	4.0E-06	µg/m³	--	1/(µg/m³)	--	2.8E-07	mg/m³	--	mg/m³	--			

**Table 7.3.RME**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (RME)
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations						
					Value	Units	Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient			
							Value	Units	Value	Units		Value	Units	Value	Units				
Mixed Soil (0 to 10 ft bgs) (continued)	Outdoor Air (continued)	Particulates/ Vapors in Outdoor Air (continued)	Inhalation	Iron	6.0E+04	mg/kg	1.5E-04	µg/m³	--	1/(µg/m³)	--	1.0E-05	mg/m³	--	mg/m³	--			
				Lead	6.6E+02	mg/kg	1.6E-06	µg/m³	--	1/(µg/m³)	--	1.2E-07	mg/m³	--	mg/m³	--			
				Manganese	7.2E+02	mg/kg	1.8E-06	µg/m³	--	1/(µg/m³)	--	1.3E-07	mg/m³	5.0E-05	mg/m³	2.5E-03			
				Mercury (elemental)	1.1E+02	mg/kg	2.9E-07	µg/m³	--	1/(µg/m³)	--	6.1E-04	mg/m³	3.0E-04	mg/m³	2.0E+00			
				Mercury (inorganic)	1.0E+03	mg/kg	2.6E-06	µg/m³	--	1/(µg/m³)	--	1.8E-07	mg/m³	3.0E-05	mg/m³	6.0E-03			
				Nickel	1.0E+02	mg/kg	2.6E-07	µg/m³	2.6E-04	1/(µg/m³)	6.6E-11	1.8E-08	mg/m³	9.0E-05	mg/m³	2.0E-04			
				Silver	2.1E+00	mg/kg	5.3E-09	µg/m³	--	1/(µg/m³)	--	3.7E-10	mg/m³	--	mg/m³	--			
				Vanadium	4.5E+01	mg/kg	1.1E-07	µg/m³	--	1/(µg/m³)	--	7.9E-09	mg/m³	1.0E-04	mg/m³	7.9E-05			
				Zinc	1.1E+04	mg/kg	2.8E-05	µg/m³	--	1/(µg/m³)	--	2.0E-06	mg/m³	--	mg/m³	--			
				Total PCBs	3.5E+00	mg/kg	8.7E-09	µg/m³	5.7E-04	1/(µg/m³)	4.9E-12	6.1E-10	mg/m³	--	mg/m³	--			
				Dioxin 2,3,7,8-TCDD TEQ	1.1E-05	mg/kg	2.9E-14	µg/m³	3.8E+01	1/(µg/m³)	1.1E-12	2.0E-15	mg/m³	4.0E-08	mg/m³	5.0E-08			
				Furan 2,3,7,8-TCDD TEQ	7.2E-04	mg/kg	1.8E-12	µg/m³	3.8E+01	1/(µg/m³)	6.9E-11	1.3E-13	mg/m³	4.0E-08	mg/m³	3.2E-06			
				Benzo(a)pyrene TEQ	2.3E+00	mg/kg	5.9E-09	µg/m³	1.1E-03	1/(µg/m³)	6.5E-12	4.1E-10	mg/m³	--	mg/m³	--			
				Methylnaphthalene, 2-	2.5E+00	mg/kg	6.2E-09	µg/m³	--	1/(µg/m³)	--	4.3E-10	mg/m³	--	mg/m³	--			
				Chloroaniline, p-	1.3E-01	mg/kg	3.2E-10	µg/m³	--	1/(µg/m³)	--	2.3E-11	mg/m³	--	mg/m³	--			
				Naphthalene	4.7E+00	mg/kg	2.3E-04	µg/m³	3.4E-05	1/(µg/m³)	7.9E-09	1.6E-05	mg/m³	3.0E-03	mg/m³	5.4E-03			
				Phenanthrene	7.3E+00	mg/kg	1.8E-08	µg/m³	--	1/(µg/m³)	--	1.3E-09	mg/m³	--	mg/m³	--			
				Bis(2-ethylhexyl) phthalate	3.8E+00	mg/kg	9.5E-09	µg/m³	2.4E-06	1/(µg/m³)	2.3E-14	6.6E-10	mg/m³	--	mg/m³	--			
				Dibenzofuran	2.3E+00	mg/kg	5.7E-09	µg/m³	--	1/(µg/m³)	--	4.0E-10	mg/m³	--	mg/m³	--			
				Dichlorobenzene, 1,2-	1.0E+01	mg/kg	2.5E-08	µg/m³	--	1/(µg/m³)	--	1.4E-04	mg/m³	2.0E-01	mg/m³	6.9E-04			
				Dichlorobenzene, 1,4-	2.1E+00	mg/kg	4.7E-04	µg/m³	1.1E-05	1/(µg/m³)	5.2E-09	3.3E-05	mg/m³	8.0E-01	mg/m³	4.1E-05			
				Hexachlorobenzene	2.9E+01	mg/kg	7.4E-08	µg/m³	4.6E-04	1/(µg/m³)	3.4E-11	5.2E-09	mg/m³	--	mg/m³	--			
				Hexachlorobutadiene	4.9E+00	mg/kg	1.2E-08	µg/m³	2.2E-05	1/(µg/m³)	2.7E-13	8.7E-10	mg/m³	--	mg/m³	--			
				Trichlorobenzene, 1,2,4-	5.8E+01	mg/kg	1.5E-07	µg/m³	--	1/(µg/m³)	--	3.1E-04	mg/m³	2.0E-03	mg/m³	1.6E-01			
				Benzene	2.7E+00	mg/kg	1.7E-03	µg/m³	7.8E-06	1/(µg/m³)	1.4E-08	1.2E-04	mg/m³	3.0E-02	mg/m³	4.1E-03			
				Chlorobenzene	1.4E+00	mg/kg	3.4E-09	µg/m³	--	1/(µg/m³)	--	3.4E-05	mg/m³	5.0E-02	mg/m³	6.8E-04			
				Chloroform	9.0E-01	mg/kg	7.9E-04	µg/m³	2.3E-05	1/(µg/m³)	1.8E-08	5.5E-05	mg/m³	9.8E-02	mg/m³	5.6E-04			
				Ethylbenzene	2.7E-01	mg/kg	1.1E-04	µg/m³	2.5E-06	1/(µg/m³)	2.8E-10	7.8E-06	mg/m³	1.0E+00	mg/m³	7.8E-06			
				Methylene Chloride	1.2E+01	mg/kg	1.2E-02	µg/m³	4.7E-07	1/(µg/m³)	5.9E-09	8.7E-04	mg/m³	1.0E+00	mg/m³	8.7E-04			
				Tetrachloroethylene (PCE)	1.7E-01	mg/kg	1.7E-04	µg/m³	5.9E-06	1/(µg/m³)	1.0E-09	1.2E-05	mg/m³	2.7E-01	mg/m³	4.4E-05			
				Trichloroethylene (TCE)	3.8E+00	mg/kg	3.9E-03	µg/m³	2.0E-06	1/(µg/m³)	7.9E-09	6.6E-10	mg/m³	--	mg/m³	--			
				Vinyl Chloride	8.9E-03	mg/kg	2.2E-05	µg/m³	4.4E-06	1/(µg/m³)	9.5E-11	1.5E-06	mg/m³	1.0E-01	mg/m³	1.5E-05			
Route Total											6.2E-08					2.2E+00			
Exposure Medium Total											6.2E-08					2.2E+00			
Mixed Soil Total											6.5E-06					1.3E+01			
Groundwater	Shallow (Overburden) Groundwater	Shallow (Overburden) Groundwater at the Water Table	Dermal Contact	Antimony	6.0E+00	µg/L	--	--	--	--	--	8.1E-07	mg/kg-day	6.0E-05	mg/kg-day	1.3E-02			
				Arsenic	2.8E+02	µg/L	5.3E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	7.9E-07	3.7E-05	mg/kg-day	3.0E-04	mg/kg-day	1.2E-01			
				Barium	1.4E+04	µg/L	--	--	--	--	--	1.9E-03	mg/kg-day	1.4E-02	mg/kg-day	1.4E-01			
				Cadmium	2.3E+01	µg/L	--	--	--	--	--	3.1E-06	mg/kg-day	2.5E-05	mg/kg-day	1.2E-01			
				Cobalt	1.9E+02	µg/L	--	--	--	--	--	1.0E-05	mg/kg-day	3.0E-04	mg/kg-day	3.4E-02			
				Iron	3.5E+05	µg/L	--	--	--	--	--	4.6E-02	mg/kg-day	7.0E-01	mg/kg-day	6.6E-02			
				Manganese	2.2E+05	µg/L	--	--	--	--	--	2.9E-02	mg/kg-day	9.6E-04	mg/kg-day	3.1E+01			
				Mercury	2.3E+02	µg/L	--	--	--	--	--	3.1E-05	mg/kg-day	2.1E-05	mg/kg-day	1.5E+00			
				Methyl Mercury	1.7E+02	µg/L	--	--	--	--	--	2.3E-05	mg/kg-day	1.0E-04	mg/kg-day	2.3E-01			
				Vanadium	1.4E+02	µg/L	--	--	--	--	--	1.8E-05	mg/kg-day	1.8E-06	mg/kg-day	1.0E+01			
				Zinc	1.7E+03	µg/L	--	--	--	--	--	1.4E-04	mg/kg-day	3.0E-01	mg/kg-day	4.5E-04			

**Table 7.3.RME**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (RME)
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations							
					Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient					
					Value	Units	Value	Units		Value	Units	Value	Units						
				Cyanide	7.7E+01	µg/L	--	--	--	--	--	1.0E-05	mg/kg-day	2.0E-02	mg/kg-day	5.2E-04			
				Dioxin 2,3,7,8-TCDD TEQ	1.9E-05	µg/L	2.9E-11	mg/kg-day	1.3E+05	1/(mg/kg-day)	3.8E-06	2.1E-09	mg/kg-day	1.0E-09	mg/kg-day	2.1E+00			
				Furan 2,3,7,8-TCDD TEQ	1.6E-04	µg/L	2.0E-10	mg/kg-day	1.3E+05	1/(mg/kg-day)	2.7E-05	1.4E-08	mg/kg-day	1.0E-09	mg/kg-day	1.4E+01			
				Benz(a)anthracene	7.8E-01	µg/L	8.2E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	6.0E-07	--	--	--	--	--			
				Naphthalene	5.6E+02	µg/L	--	--	--	--	--	3.5E-03	mg/kg-day	2.0E-02	mg/kg-day	1.8E-01			
				Carbazole	1.4E+02	µg/L	1.5E-05	mg/kg-day	2.0E-02	1/(mg/kg-day)	2.9E-07	--	--	--	--	--			
				Chloroaniline, p-	4.5E+03	µg/L	4.2E-05	mg/kg-day	2.0E-01	1/(mg/kg-day)	8.5E-06	3.0E-03	mg/kg-day	4.0E-03	mg/kg-day	7.4E-01			
Groundwater (continued)	Shallow (Overburden)	Shallow (Overburden)	Dermal Contact	Dibenzofuran	1.6E+01	µg/L	--	--	--	--	--	2.1E-04	mg/kg-day	1.0E-03	mg/kg-day	2.1E-01			
				Dichlorobenzene, 1,2-	4.2E+03	µg/L	--	--	--	--	--	2.5E-02	mg/kg-day	9.0E-02	mg/kg-day	2.8E-01			
				Dichlorobenzene, 1,3-	2.0E+02	µg/L	--	--	--	--	--	1.4E-03	mg/kg-day	9.0E-02	mg/kg-day	1.5E-02			
				Dichlorobenzene, 1,4-	5.8E+02	µg/L	5.1E-05	mg/kg-day	5.4E-03	1/(mg/kg-day)	2.7E-07	3.5E-03	mg/kg-day	7.0E-02	mg/kg-day	5.1E-02			
				Hexachlorobenzene	1.0E+00	µg/L	4.9E-07	mg/kg-day	1.6E+00	1/(mg/kg-day)	7.8E-07	3.4E-05	mg/kg-day	8.0E-04	mg/kg-day	4.3E-02			
				Nitrobenzene	5.5E+01	µg/L	--	--	--	--	--	4.0E-05	mg/kg-day	2.0E-03	mg/kg-day	2.0E-02			
				Dichlorophenol, 2,4-	1.2E+01	µg/L	--	--	--	--	--	3.2E-05	mg/kg-day	3.0E-03	mg/kg-day	1.1E-02			
				Chlorophenol, 2-	2.6E+01	µg/L	--	--	--	--	--	2.8E-05	mg/kg-day	5.0E-03	mg/kg-day	5.6E-03			
				Pentachlorophenol	1.9E+00	µg/L	4.6E-07	mg/kg-day	4.0E-01	1/(mg/kg-day)	1.8E-07	3.2E-05	mg/kg-day	5.0E-03	mg/kg-day	6.4E-03			
				Trichlorobenzene, 1,2,4-	2.9E+02	µg/L	3.9E-05	mg/kg-day	2.9E-02	1/(mg/kg-day)	1.1E-06	2.7E-03	mg/kg-day	1.0E-02	mg/kg-day	2.7E-01			
				Benzene	8.5E+02	µg/L	2.4E-05	mg/kg-day	5.5E-02	1/(mg/kg-day)	1.3E-06	1.7E-03	mg/kg-day	4.0E-03	mg/kg-day	4.2E-01			
				Chlorobenzene	1.6E+04	µg/L	--	--	--	--	--	6.1E-02	mg/kg-day	2.0E-02	mg/kg-day	3.1E+00			
				Chloroform	3.5E+00	µg/L	4.6E-08	mg/kg-day	3.1E-02	1/(mg/kg-day)	1.4E-09	3.2E-06	mg/kg-day	1.0E-02	mg/kg-day	3.2E-04			
				Dichloroethane, 1,1-	2.6E+00	µg/L	3.4E-08	mg/kg-day	5.7E-03	1/(mg/kg-day)	1.9E-10	2.4E-06	mg/kg-day	2.0E-01	mg/kg-day	1.2E-05			
				Dichloroethane, 1,2-	1.8E+00	µg/L	1.5E-08	mg/kg-day	9.1E-02	1/(mg/kg-day)	1.3E-09	1.0E-06	mg/kg-day	2.0E-02	mg/kg-day	5.1E-05			
				Ethylbenzene	3.0E+01	µg/L	2.9E-06	mg/kg-day	1.1E-02	1/(mg/kg-day)	3.2E-08	2.0E-04	mg/kg-day	1.0E-01	mg/kg-day	2.0E-03			
				Methylene Chloride	2.0E+03	µg/L	1.3E-05	mg/kg-day	7.5E-03	1/(mg/kg-day)	1.0E-07	9.3E-04	mg/kg-day	6.0E-02	mg/kg-day	1.6E-02			
				Tetrachloroethylene (PCE)	6.9E+00	µg/L	4.4E-07	mg/kg-day	5.4E-01	1/(mg/kg-day)	2.4E-07	3.1E-05	mg/kg-day	1.0E-02	mg/kg-day	3.1E-03			
				Vinyl Chloride	7.1E-01	µg/L	1.1E-08	mg/kg-day	7.2E-01	1/(mg/kg-day)	8.2E-09	8.0E-07	mg/kg-day	3.0E-03	mg/kg-day	2.7E-04			
				Xylenes, Mixed	1.3E+02	µg/L	--	--	--	--	--	8.1E-04	mg/kg-day	2.0E-01	mg/kg-day	4.0E-03			
Route Total											4.5E-05					6.5E+01			
Exposure Medium Total											4.5E-05					6.5E+01			
Groundwater Total											4.5E-05					6.5E+01			
Total of Receptor Risks Across All Media										5.1E-05					Total of Receptor Hazards Across All Media	7.8E+01			

**Table 7.3.CTE**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (CTE)
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations					
					Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient				
					Value	Units	Value	Units		Value	Units	Value	Units					
Mixed Soil (0 to 10 ft bgs)	Mixed Soil (0 to 10 ft bgs)	Mixed Soil (0 to 10 ft bgs)	Ingestion	Aluminum	1.2E+04	mg/kg	1.4E-04	mg/kg-day	--	--	--	1.0E-02	mg/kg-day	1.0E+00	mg/kg-day	1.0E-02		
				Antimony	1.7E+01	mg/kg	2.1E-07	mg/kg-day	--	--	--	1.5E-05	mg/kg-day	4.0E-04	mg/kg-day	3.7E-02		
				Arsenic	4.1E+01	mg/kg	4.9E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	7.4E-07	3.4E-05	mg/kg-day	3.0E-04	mg/kg-day	1.1E-01		
				Barium	1.8E+03	mg/kg	2.2E-05	mg/kg-day	--	--	--	1.5E-03	mg/kg-day	2.0E-01	mg/kg-day	7.5E-03		
				Beryllium	3.3E+00	mg/kg	4.0E-08	mg/kg-day	--	--	--	2.8E-06	mg/kg-day	2.0E-03	mg/kg-day	1.4E-03		
				Cadmium	4.7E+00	mg/kg	5.6E-08	mg/kg-day	--	--	--	3.9E-06	mg/kg-day	1.0E-03	mg/kg-day	3.9E-03		
				Chromium, Hexavalent	2.4E+00	mg/kg	2.9E-08	mg/kg-day	5.0E-01	1/(mg/kg-day)	1.4E-08	2.0E-06	mg/kg-day	3.0E-03	mg/kg-day	6.8E-04		
				Cobalt	5.6E+01	mg/kg	6.7E-07	mg/kg-day	--	--	--	4.7E-05	mg/kg-day	3.0E-04	mg/kg-day	1.6E-01		
				Copper	1.6E+03	mg/kg	1.9E-05	mg/kg-day	--	--	--	1.3E-03	mg/kg-day	4.0E-02	mg/kg-day	3.3E-02		
				Iron	6.0E+04	mg/kg	7.1E-04	mg/kg-day	--	--	--	5.0E-02	mg/kg-day	7.0E-01	mg/kg-day	7.1E-02		
				Lead	6.6E+02	mg/kg	7.9E-06	mg/kg-day	--	--	--	5.5E-04	mg/kg-day	--	--	--		
				Manganese	7.2E+02	mg/kg	8.6E-06	mg/kg-day	--	--	--	6.0E-04	mg/kg-day	2.4E-02	mg/kg-day	2.5E-02		
				Mercury (elemental)	1.1E+02	mg/kg	1.4E-06	mg/kg-day	--	--	--	9.5E-05	mg/kg-day	1.6E-04	mg/kg-day	6.0E-01		
				Mercury (inorganic)	1.0E+03	mg/kg	1.2E-05	mg/kg-day	--	--	--	8.6E-04	mg/kg-day	3.0E-04	mg/kg-day	2.9E+00		
				Nickel	1.0E+02	mg/kg	1.2E-06	mg/kg-day	--	--	--	8.5E-05	mg/kg-day	2.0E-02	mg/kg-day	4.3E-03		
				Silver	2.1E+00	mg/kg	2.5E-08	mg/kg-day	--	--	--	1.8E-06	mg/kg-day	5.0E-03	mg/kg-day	3.5E-04		
				Vanadium	4.5E+01	mg/kg	5.4E-07	mg/kg-day	--	--	--	3.8E-05	mg/kg-day	7.0E-05	mg/kg-day	5.4E-01		
				Zinc	1.1E+04	mg/kg	1.3E-04	mg/kg-day	--	--	--	9.4E-03	mg/kg-day	3.0E-01	mg/kg-day	3.1E-02		
				Total PCBs	3.5E+00	mg/kg	4.1E-08	mg/kg-day	2.0E+00	1/(mg/kg-day)	8.3E-08	2.9E-06	mg/kg-day	2.0E-05	mg/kg-day	1.4E-01		
				Dioxin 2,3,7,8-TCDD TEQ	1.1E-05	mg/kg	1.4E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	1.8E-08	9.6E-12	mg/kg-day	1.0E-09	mg/kg-day	9.6E-03		
				Furan 2,3,7,8-TCDD TEQ	7.2E-04	mg/kg	8.7E-12	mg/kg-day	1.3E+05	1/(mg/kg-day)	1.1E-06	6.1E-10	mg/kg-day	1.0E-09	mg/kg-day	6.1E-01		
				Benzo(a)pyrene TEQ	2.3E+00	mg/kg	2.8E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	2.1E-07	2.0E-06	mg/kg-day	--	--	--		
				Methylnaphthalene, 2-	2.5E+00	mg/kg	2.9E-08	mg/kg-day	--	--	--	2.1E-06	mg/kg-day	4.0E-03	mg/kg-day	5.2E-04		
				Chloroaniline, p-	1.3E-01	mg/kg	1.5E-09	mg/kg-day	2.0E-01	1/(mg/kg-day)	3.1E-10	1.1E-07	mg/kg-day	4.0E-03	mg/kg-day	2.7E-05		
				Naphthalene	4.7E+00	mg/kg	5.6E-08	mg/kg-day	--	--	--	3.9E-06	mg/kg-day	2.0E-02	mg/kg-day	2.0E-04		
				Phenanthrene	7.3E+00	mg/kg	8.8E-08	mg/kg-day	--	--	--	6.2E-06	mg/kg-day	3.0E-02	mg/kg-day	2.1E-04		
				Bis(2-ethylhexyl) phthalate	3.8E+00	mg/kg	4.5E-08	mg/kg-day	1.4E-02	1/(mg/kg-day)	6.3E-10	3.2E-06	mg/kg-day	2.0E-02	mg/kg-day	1.6E-04		
				Dibenzofuran	2.3E+00	mg/kg	2.7E-08	mg/kg-day	--	--	--	1.9E-06	mg/kg-day	1.0E-03	mg/kg-day	1.9E-03		
				Dichlorobenzene, 1,2-	1.0E+01	mg/kg	1.2E-07	mg/kg-day	--	--	--	8.4E-06	mg/kg-day	9.0E-02	mg/kg-day	9.3E-05		
				Dichlorobenzene, 1,4-	2.1E+00	mg/kg	2.6E-08	mg/kg-day	5.4E-03	1/(mg/kg-day)	1.4E-10	1.8E-06	mg/kg-day	7.0E-02	mg/kg-day	2.6E-05		
				Hexachlorobenzene	2.9E+01	mg/kg	3.5E-07	mg/kg-day	1.6E+00	1/(mg/kg-day)	5.7E-07	2.5E-05	mg/kg-day	8.0E-04	mg/kg-day	3.1E-02		
				Hexachlorobutadiene	4.9E+00	mg/kg	5.9E-08	mg/kg-day	7.8E-02	1/(mg/kg-day)	4.6E-09	4.1E-06	mg/kg-day	1.0E-03	mg/kg-day	4.1E-03		
				Trichlorobenzene, 1,2,4-	5.8E+01	mg/kg	7.0E-07	mg/kg-day	2.9E-02	1/(mg/kg-day)	2.0E-08	4.9E-05	mg/kg-day	1.0E-02	mg/kg-day	4.9E-03		
				Benzene	2.7E+00	mg/kg	3.2E-08	mg/kg-day	5.5E-02	1/(mg/kg-day)	1.8E-09	2.2E-06	mg/kg-day	4.0E-03	mg/kg-day	5.6E-04		
				Chlorobenzene	1.4E+00	mg/kg	1.6E-08	mg/kg-day	--	--	--	1.1E-06	mg/kg-day	2.0E-02	mg/kg-day	5.7E-05		
				Chloroform	9.0E-01	mg/kg	1.1E-08	mg/kg-day	3.1E-02	1/(mg/kg-day)	3.3E-10	7.5E-07	mg/kg-day	1.0E-02	mg/kg-day	7.5E-05		
				Ethylbenzene	2.7E-01	mg/kg	3.3E-09	mg/kg-day	1.1E-02	1/(mg/kg-day)	3.6E-11	2.3E-07	mg/kg-day	1.0E-01	mg/kg-day	2.3E-06		
				Methylene Chloride	1.2E+01	mg/kg	1.4E-07	mg/kg-day	7.5E-03	1/(mg/kg-day)	1.1E-09	9.9E-06	mg/kg-day	6.0E-02	mg/kg-day	1.7E-04		
				Tetrachloroethylene (PCE)	1.7E-01	mg/kg	2.1E-09	mg/kg-day	5.4E-01	1/(mg/kg-day)	1.1E-09	1.5E-07	mg/kg-day	1.0E-02	mg/kg-day	1.5E-05		
				Trichloroethylene (TCE)	3.8E+00	mg/kg	4.5E-08	mg/kg-day	5.9E-03	1/(mg/kg-day)	2.7E-10	3.2E-06	mg/kg-day	--	--	--		
				Vinyl Chloride	8.9E-03	mg/kg	1.1E-10	mg/kg-day	7.2E-01	1/(mg/kg-day)	7.7E-11	7.5E-09	mg/kg-day	3.0E-03	mg/kg-day	2.5E-06		
<b>Route Total</b>												<b>2.8E-06</b>				<b>5.3E+00</b>		
Dermal Contact				Aluminum	1.2E+04	mg/kg	--	--	--	--	--	--	--	--	--	--		
				Antimony	1.7E+01	mg/kg	--	--	--	--	--	--	6.0E-05	mg/kg-day	3.0E-04	mg/kg-day		
				Arsenic	4.1E+01	mg/kg	4.4E-08	mg/kg-day	1.5E+00	1/(mg/kg-day)	6.6E-08	3.1E-06	mg/kg-day	3.0E-04	mg/kg-day	1.0E-02		
				Barium	1.8E+03	mg/kg	--	--	--	--	--	--	1.4E-02	mg/kg-day	--	--		
				Beryllium	3.3E+00	mg/kg	--	--	--	--	--	--	1.4E-05	mg/kg-day	--	--		

**Table 7.3.CTE**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (CTE)
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations							
					Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient					
					Value	Units	Value	Units		Value	Units	Value	Units						
Mixed Soil (0 to 10 ft bgs) (continued)	Mixed Soil (0 to 10 ft bgs) (continued)	Mixed Soil Contact (continued)	Dermal (continued)	Cadmium	4.7E+00	mg/kg	--	--	--	--	--	1.2E-08	mg/kg-day	2.5E-05	mg/kg-day	4.7E-04			
				Chromium, Hexavalent	2.4E+00	mg/kg	--	--	2.0E+01	1/(mg/kg-day)	--	--	--	7.5E-05	--	--			
				Cobalt	5.6E+01	mg/kg	--	--	--	--	--	--	--	3.0E-04	mg/kg-day	--			
				Copper	1.6E+03	mg/kg	--	--	--	--	--	--	--	4.0E-02	mg/kg-day	--			
				Iron	6.0E+04	mg/kg	--	--	--	--	--	--	--	7.0E-01	mg/kg-day	--			
				Lead	6.6E+02	mg/kg	--	--	--	--	--	--	--	9.6E-04	mg/kg-day	--			
				Manganese	7.2E+02	mg/kg	--	--	--	--	--	--	--	1.6E-04	mg/kg-day	--			
				Mercury (elemental)	1.1E+02	mg/kg	--	--	--	--	--	--	--	2.1E-05	mg/kg-day	--			
				Mercury (inorganic)	1.0E+03	mg/kg	--	--	--	--	--	--	--	8.0E-04	mg/kg-day	--			
				Nickel	1.0E+02	mg/kg	--	--	--	--	--	--	--	2.0E-04	mg/kg-day	--			
				Silver	2.1E+00	mg/kg	--	--	--	--	--	--	--	1.8E-06	mg/kg-day	--			
				Vanadium	4.5E+01	mg/kg	--	--	--	--	--	--	--	3.0E-01	mg/kg-day	--			
				Zinc	1.1E+04	mg/kg	--	--	--	--	--	--	--	1.2E-06	mg/kg-day	6.1E-02			
				Total PCBs	3.5E+00	mg/kg	1.7E-08	mg/kg-day	2.0E+00	1/(mg/kg-day)	3.5E-08	8.7E-13	5.5E-11	1.0E-09	1.0E-09	8.7E-04			
				Dioxin 2,3,7,8-TCDD TEQ	1.1E-05	mg/kg	1.2E-14	mg/kg-day	1.3E+05	1/(mg/kg-day)	1.6E-09	5.5E-11	5.5E-11	1.0E-09	1.0E-09	5.5E-02			
				Furan 2,3,7,8-TCDD TEQ	7.2E-04	mg/kg	7.8E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	1.0E-07	9.5E-07	7.4E-06	1.0E-09	1.0E-09	7.6E-05			
				Benzo(a)pyrene TEQ	2.3E+00	mg/kg	1.1E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	8.0E-08	--	--	--	--	--			
				Methylnaphthalene, 2-	2.5E+00	mg/kg	--	--	--	--	--	--	--	4.0E-03	mg/kg-day	--			
				Chloroaniline, p-	1.3E-01	mg/kg	4.6E-10	mg/kg-day	2.0E-01	1/(mg/kg-day)	9.3E-11	3.2E-08	1.2E-06	4.0E-03	4.0E-03	8.1E-06			
				Naphthalene	4.7E+00	mg/kg	--	--	--	--	--	--	--	1.5E-06	mg/kg-day	7.6E-05			
				Phenanthrene	7.3E+00	mg/kg	3.4E-08	mg/kg-day	--	--	--	--	--	2.4E-06	mg/kg-day	8.0E-05			
				Bis(2-ethylhexyl) phthalate	3.8E+00	mg/kg	1.4E-08	mg/kg-day	1.4E-02	1/(mg/kg-day)	1.9E-10	9.5E-07	1.2E-06	2.0E-02	2.0E-02	4.8E-05			
				Dibenzofuran	2.3E+00	mg/kg	--	--	--	--	--	--	--	1.0E-03	mg/kg-day	--			
				Dichlorobenzene, 1,2-	1.0E+01	mg/kg	--	--	--	--	--	--	--	9.0E-02	mg/kg-day	--			
				Dichlorobenzene, 1,4-	2.1E+00	mg/kg	--	--	--	--	--	--	--	7.0E-02	mg/kg-day	--			
				Hexachlorobenzene	2.9E+01	mg/kg	1.1E-07	mg/kg-day	1.6E+00	1/(mg/kg-day)	1.7E-07	7.4E-06	7.4E-06	8.0E-04	8.0E-04	9.3E-03			
				Hexachlorobutadiene	4.9E+00	mg/kg	1.8E-08	mg/kg-day	7.8E-02	1/(mg/kg-day)	1.4E-09	1.2E-06	1.2E-06	1.0E-03	1.0E-03	1.2E-03			
				Trichlorobenzene, 1,2,4-	5.8E+01	mg/kg	--	--	--	--	--	--	--	1.0E-02	mg/kg-day	--			
				Benzene	2.7E+00	mg/kg	--	--	--	--	--	--	--	4.0E-03	mg/kg-day	--			
				Chlorobenzene	1.4E+00	mg/kg	--	--	--	--	--	--	--	2.0E-02	2.0E-02	--			
				Chloroform	9.0E-01	mg/kg	--	--	--	--	--	--	--	1.0E-02	1.0E-02	--			
				Ethylbenzene	2.7E-01	mg/kg	--	--	--	--	--	--	--	1.0E-01	1.0E-01	--			
				Methylene Chloride	1.2E+01	mg/kg	--	--	--	--	--	--	--	6.0E-02	6.0E-02	--			
				Tetrachloroethylene (PCE)	1.7E-01	mg/kg	--	--	--	--	--	--	--	1.0E-02	1.0E-02	--			
				Trichloroethylene (TCE)	3.8E+00	mg/kg	--	--	--	--	--	--	--	--	--	--			
				Vinyl Chloride	8.9E-03	mg/kg	--	--	--	--	--	--	--	3.0E-03	3.0E-03	--			
Route Total												4.6E-07				1.4E-01			
Exposure Medium Total												3.2E-06				5.4E+00			
Outdoor Air	Particulates/ Vapors in Outdoor Air	Inhalation	Antimony	1.2E+04	mg/kg	1.5E-05	µg/m³	--	1/(µg/m³)	--	1.1E-06	mg/m³	5.0E-03	mg/m³	2.1E-04				
			Arsenic	1.7E+01	mg/kg	2.2E-08	µg/m³	--	1/(µg/m³)	--	1.5E-09	mg/m³	--	mg/m³	--				
			Barium	1.8E+03	mg/kg	5.2E-08	µg/m³	4.3E-03	1/(µg/m³)	2.2E-10	3.6E-09	mg/m³	1.5E-05	mg/m³	2.4E-04				
			Beryllium	3.3E+00	mg/kg	2.3E-06	µg/m³	--	1/(µg/m³)	--	1.6E-07	mg/m³	5.0E-04	mg/m³	3.2E-04				
			Cadmium	4.7E+00	mg/kg	4.1E-09	µg/m³	2.4E-03	1/(µg/m³)	9.9E-12	2.9E-10	mg/m³	2.0E-05	mg/m³	1.4E-05				
			Chromium, Hexavalent	2.4E+00	mg/kg	3.0E-09	µg/m³	8.4E-02	1/(µg/m³)	2.5E-10	2.1E-10	mg/m³	1.0E-04	mg/m³	2.1E-06				
			Cobalt	5.6E+01	mg/kg	7.0E-08	µg/m³	9.0E-03	1/(µg/m³)	6.3E-10	4.9E-09	mg/m³	6.0E-06	mg/m³	8.1E-04				
			Copper	1.6E+03	mg/kg	2.0E-06	µg/m³	--	1/(µg/m³)	--	1.4E-07	mg/m³	--	mg/m³	--				

**Table 7.3.CTE**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (CTE)
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations						
					Value	Units	Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient			
							Value	Units	Value	Units		Value	Units	Value	Units				
Mixed Soil (0 to 10 ft bgs) (continued)	Outdoor Air (continued)	Particulates/ Vapors in Outdoor Air (continued)	Inhalation	Iron	6.0E+04	mg/kg	7.5E-05	µg/m³	--	1/(µg/m³)	--	5.2E-06	mg/m³	--	mg/m³	--			
				Lead	6.6E+02	mg/kg	8.2E-07	µg/m³	--	1/(µg/m³)	--	5.8E-08	mg/m³	--	mg/m³	--			
				Manganese	7.2E+02	mg/kg	9.0E-07	µg/m³	--	1/(µg/m³)	--	6.3E-08	mg/m³	5.0E-05	mg/m³	1.3E-03			
				Mercury (elemental)	1.1E+02	mg/kg	1.4E-07	µg/m³	--	1/(µg/m³)	--	3.0E-04	mg/m³	3.0E-04	mg/m³	1.0E+00			
				Mercury (inorganic)	1.0E+03	mg/kg	1.3E-06	µg/m³	--	1/(µg/m³)	--	9.0E-08	mg/m³	3.0E-05	mg/m³	3.0E-03			
				Nickel	1.0E+02	mg/kg	1.3E-07	µg/m³	2.6E-04	1/(µg/m³)	3.3E-11	8.9E-09	mg/m³	9.0E-05	mg/m³	9.9E-05			
				Silver	2.1E+00	mg/kg	2.6E-09	µg/m³	--	1/(µg/m³)	--	1.8E-10	mg/m³	--	mg/m³	--			
				Vanadium	4.5E+01	mg/kg	5.6E-08	µg/m³	--	1/(µg/m³)	--	3.9E-09	mg/m³	1.0E-04	mg/m³	3.9E-05			
				Zinc	1.1E+04	mg/kg	1.4E-05	µg/m³	--	1/(µg/m³)	--	9.8E-07	mg/m³	--	mg/m³	--			
				Total PCBs	3.5E+00	mg/kg	4.3E-09	µg/m³	5.7E-04	1/(µg/m³)	2.5E-12	3.0E-10	mg/m³	--	mg/m³	--			
				Dioxin 2,3,7,8-TCDD TEQ	1.1E-05	mg/kg	1.4E-14	µg/m³	3.8E+01	1/(µg/m³)	5.5E-13	1.0E-15	mg/m³	4.0E-08	mg/m³	2.5E-08			
				Furan 2,3,7,8-TCDD TEQ	7.2E-04	mg/kg	9.1E-13	µg/m³	3.8E+01	1/(µg/m³)	3.4E-11	6.4E-14	mg/m³	4.0E-08	mg/m³	1.6E-06			
				Benzo(a)pyrene TEQ	2.3E+00	mg/kg	2.9E-09	µg/m³	1.1E-03	1/(µg/m³)	3.2E-12	2.1E-10	mg/m³	--	mg/m³	--			
				Methylnaphthalene, 2-	2.5E+00	mg/kg	3.1E-09	µg/m³	--	1/(µg/m³)	--	2.2E-10	mg/m³	--	mg/m³	--			
				Chloroaniline, p-	1.3E-01	mg/kg	1.6E-10	µg/m³	--	1/(µg/m³)	--	1.1E-11	mg/m³	--	mg/m³	--			
				Naphthalene	4.7E+00	mg/kg	1.2E-04	µg/m³	3.4E-05	1/(µg/m³)	3.9E-09	8.1E-06	mg/m³	3.0E-03	mg/m³	2.7E-03			
				Phenanthrene	7.3E+00	mg/kg	9.2E-09	µg/m³	--	1/(µg/m³)	--	6.4E-10	mg/m³	--	mg/m³	--			
				Bis(2-ethylhexyl) phthalate	3.8E+00	mg/kg	4.7E-09	µg/m³	2.4E-06	1/(µg/m³)	1.1E-14	3.3E-10	mg/m³	--	mg/m³	--			
				Dibenzofuran	2.3E+00	mg/kg	2.8E-09	µg/m³	--	1/(µg/m³)	--	2.0E-10	mg/m³	--	mg/m³	--			
				Dichlorobenzene, 1,2-	1.0E+01	mg/kg	1.2E-08	µg/m³	--	1/(µg/m³)	--	6.9E-05	mg/m³	2.0E-01	mg/m³	3.4E-04			
				Dichlorobenzene, 1,4-	2.1E+00	mg/kg	2.4E-04	µg/m³	1.1E-05	1/(µg/m³)	2.6E-09	1.6E-05	mg/m³	8.0E-01	mg/m³	2.1E-05			
				Hexachlorobenzene	2.9E+01	mg/kg	3.7E-08	µg/m³	4.6E-04	1/(µg/m³)	1.7E-11	2.6E-09	mg/m³	--	mg/m³	--			
				Hexachlorobutadiene	4.9E+00	mg/kg	6.2E-09	µg/m³	2.2E-05	1/(µg/m³)	1.4E-13	4.3E-10	mg/m³	--	mg/m³	--			
				Trichlorobenzene, 1,2,4-	5.8E+01	mg/kg	7.3E-08	µg/m³	--	1/(µg/m³)	--	1.6E-04	mg/m³	2.0E-03	mg/m³	7.9E-02			
				Benzene	2.7E+00	mg/kg	8.7E-04	µg/m³	7.8E-06	1/(µg/m³)	6.8E-09	6.1E-05	mg/m³	3.0E-02	mg/m³	2.0E-03			
				Chlorobenzene	1.4E+00	mg/kg	1.7E-09	µg/m³	--	1/(µg/m³)	--	1.7E-05	mg/m³	5.0E-02	mg/m³	3.4E-04			
				Chloroform	9.0E-01	mg/kg	3.9E-04	µg/m³	2.3E-05	1/(µg/m³)	9.0E-09	2.8E-05	mg/m³	9.8E-02	mg/m³	2.8E-04			
				Ethylbenzene	2.7E-01	mg/kg	5.6E-05	µg/m³	2.5E-06	1/(µg/m³)	1.4E-10	3.9E-06	mg/m³	1.0E+00	mg/m³	3.9E-06			
				Methylene Chloride	1.2E+01	mg/kg	6.2E-03	µg/m³	4.7E-07	1/(µg/m³)	2.9E-09	4.4E-04	mg/m³	1.0E+00	mg/m³	4.4E-04			
				Tetrachloroethylene (PCE)	1.7E-01	mg/kg	8.6E-05	µg/m³	5.9E-06	1/(µg/m³)	5.1E-10	6.0E-06	mg/m³	2.7E-01	mg/m³	2.2E-05			
				Trichloroethylene (TCE)	3.8E+00	mg/kg	2.0E-03	µg/m³	2.0E-06	1/(µg/m³)	3.9E-09	3.3E-10	mg/m³	--	mg/m³	--			
				Vinyl Chloride	8.9E-03	mg/kg	1.1E-05	µg/m³	4.4E-06	1/(µg/m³)	4.7E-11	7.5E-07	mg/m³	1.0E-01	mg/m³	7.5E-06			
Route Total											3.1E-08					1.1E+00			
Exposure Medium Total											3.1E-08					1.1E+00			
Mixed Soil Total											3.3E-06					6.5E+00			
Groundwater	Shallow (Overburden) Groundwater	Shallow (Overburden) Groundwater at the Water Table	Dermal Contact	Antimony	6.0E+00	µg/L	--	--	--	--	--	4.0E-07	mg/kg-day	6.0E-05	mg/kg-day	6.7E-03			
				Arsenic	2.8E+02	µg/L	2.6E-07	mg/kg-day	1.5E+00	1/(mg/kg-day)	4.0E-07	1.8E-05	mg/kg-day	3.0E-04	mg/kg-day	6.2E-02			
				Barium	1.4E+04	µg/L	--	--	--	--	--	9.5E-04	mg/kg-day	1.4E-02	mg/kg-day	6.8E-02			
				Cadmium	2.3E+01	µg/L	--	--	--	--	--	1.5E-06	mg/kg-day	2.5E-05	mg/kg-day	6.2E-02			
				Cobalt	1.9E+02	µg/L	--	--	--	--	--	5.1E-06	mg/kg-day	3.0E-04	mg/kg-day	1.7E-02			
				Iron	3.5E+05	µg/L	--	--	--	--	--	2.3E-02	mg/kg-day	7.0E-01	mg/kg-day	3.3E-02			
				Manganese	2.2E+05	µg/L	--	--	--	--	--	1.5E-02	mg/kg-day	9.6E-04	mg/kg-day	1.5E+01			
				Mercury	2.3E+02	µg/L	--	--	--	--	--	1.6E-05	mg/kg-day	2.1E-05	mg/kg-day	7.5E-01			
				Methyl Mercury	1.7E+02	µg/L	--	--	--	--	--	1.1E-05	mg/kg-day	1.0E-04	mg/kg-day	1.1E-01			
				Vanadium	1.4E+02	µg/L	--	--	--	--	--	9.1E-06	mg/kg-day	1.8E-06	mg/kg-day	5.0E+00			
				Zinc	1.7E+03	µg/L	--	--	--	--	--	6.8E-05	mg/kg-day	3.0E-01	mg/kg-day	2.3E-04			

**Table 7.3.CTE**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (CTE)
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations					Non-Cancer Hazard Calculations							
					Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient					
					Value	Units	Value	Units		Value	Units	Value	Units						
				Cyanide	7.7E+01	µg/L	--	--	--	--	--	5.2E-06	mg/kg-day	2.0E-02	mg/kg-day	2.6E-04			
				Dioxin 2,3,7,8-TCDD TEQ	1.9E-05	µg/L	1.5E-11	mg/kg-day	1.3E+05	1/(mg/kg-day)	1.9E-06	1.0E-09	mg/kg-day	1.0E-09	mg/kg-day	1.0E+00			
				Furan 2,3,7,8-TCDD TEQ	1.6E-04	µg/L	1.0E-10	mg/kg-day	1.3E+05	1/(mg/kg-day)	1.3E-05	7.1E-09	mg/kg-day	1.0E-09	mg/kg-day	7.1E+00			
				Benz(a)anthracene	7.8E-01	µg/L	4.1E-07	mg/kg-day	7.3E-01	1/(mg/kg-day)	3.0E-07	--	--	--	--	--			
				Naphthalene	5.6E+02	µg/L	--	--	--	--	--	1.8E-03	mg/kg-day	2.0E-02	mg/kg-day	8.8E-02			
				Carbazole	1.4E+02	µg/L	7.4E-06	mg/kg-day	2.0E-02	1/(mg/kg-day)	1.5E-07	--	--	--	--	--			
				Chloroaniline, p-	4.5E+03	µg/L	2.1E-05	mg/kg-day	2.0E-01	1/(mg/kg-day)	4.2E-06	1.5E-03	mg/kg-day	4.0E-03	mg/kg-day	3.7E-01			
Groundwater (continued)	Shallow (Overburden)	Shallow (Overburden)	Dermal Contact	Dibenzofuran	1.6E+01	µg/L	--	--	--	--	--	1.1E-04	mg/kg-day	1.0E-03	mg/kg-day	1.1E-01			
				Dichlorobenzene, 1,2-	4.2E+03	µg/L	--	--	--	--	--	1.3E-02	mg/kg-day	9.0E-02	mg/kg-day	1.4E-01			
				Dichlorobenzene, 1,3-	2.0E+02	µg/L	--	--	--	--	--	6.9E-04	mg/kg-day	9.0E-02	mg/kg-day	7.7E-03			
				Dichlorobenzene, 1,4-	5.8E+02	µg/L	2.5E-05	mg/kg-day	5.4E-03	1/(mg/kg-day)	1.4E-07	1.8E-03	mg/kg-day	7.0E-02	mg/kg-day	2.5E-02			
				Hexachlorobenzene	1.0E+00	µg/L	2.4E-07	mg/kg-day	1.6E+00	1/(mg/kg-day)	3.9E-07	1.7E-05	mg/kg-day	8.0E-04	mg/kg-day	2.1E-02			
				Nitrobenzene	5.5E+01	µg/L	--	--	--	--	--	2.0E-05	mg/kg-day	2.0E-03	mg/kg-day	1.0E-02			
				Dichlorophenol, 2,4-	1.2E+01	µg/L	--	--	--	--	--	1.6E-05	mg/kg-day	3.0E-03	mg/kg-day	5.4E-03			
				Chlorophenol, 2-	2.6E+01	µg/L	--	--	--	--	--	1.4E-05	mg/kg-day	5.0E-03	mg/kg-day	2.8E-03			
				Pentachlorophenol	1.9E+00	µg/L	2.3E-07	mg/kg-day	4.0E-01	1/(mg/kg-day)	9.1E-08	1.6E-05	mg/kg-day	5.0E-03	mg/kg-day	3.2E-03			
				Trichlorobenzene, 1,2,4-	2.9E+02	µg/L	1.9E-05	mg/kg-day	2.9E-02	1/(mg/kg-day)	5.6E-07	1.3E-03	mg/kg-day	1.0E-02	mg/kg-day	1.3E-01			
				Benzene	8.5E+02	µg/L	1.2E-05	mg/kg-day	5.5E-02	1/(mg/kg-day)	6.7E-07	8.5E-04	mg/kg-day	4.0E-03	mg/kg-day	2.1E-01			
				Chlorobenzene	1.6E+04	µg/L	--	--	--	--	--	3.1E-02	mg/kg-day	2.0E-02	mg/kg-day	1.5E+00			
				Chloroform	3.5E+00	µg/L	2.3E-08	mg/kg-day	3.1E-02	1/(mg/kg-day)	7.1E-10	1.6E-06	mg/kg-day	1.0E-02	mg/kg-day	1.6E-04			
				Dichloroethane, 1,1-	2.6E+00	µg/L	1.7E-08	mg/kg-day	5.7E-03	1/(mg/kg-day)	9.6E-11	1.2E-06	mg/kg-day	2.0E-01	mg/kg-day	5.9E-06			
				Dichloroethane, 1,2-	1.8E+00	µg/L	7.3E-09	mg/kg-day	9.1E-02	1/(mg/kg-day)	6.6E-10	5.1E-07	mg/kg-day	2.0E-02	mg/kg-day	2.5E-05			
				Ethylbenzene	3.0E+01	µg/L	1.4E-06	mg/kg-day	1.1E-02	1/(mg/kg-day)	1.6E-08	1.0E-04	mg/kg-day	1.0E-01	mg/kg-day	1.0E-03			
				Methylene Chloride	2.0E+03	µg/L	6.7E-06	mg/kg-day	7.5E-03	1/(mg/kg-day)	5.0E-08	4.7E-04	mg/kg-day	6.0E-02	mg/kg-day	7.8E-03			
				Tetrachloroethylene (PCE)	6.9E+00	µg/L	2.2E-07	mg/kg-day	5.4E-01	1/(mg/kg-day)	1.2E-07	1.5E-05	mg/kg-day	1.0E-02	mg/kg-day	1.5E-03			
				Vinyl Chloride	7.1E-01	µg/L	5.7E-09	mg/kg-day	7.2E-01	1/(mg/kg-day)	4.1E-09	4.0E-07	mg/kg-day	3.0E-03	mg/kg-day	1.3E-04			
				Xylenes, Mixed	1.3E+02	µg/L	--	--	--	--	--	4.0E-04	mg/kg-day	2.0E-01	mg/kg-day	2.0E-03			
Route Total											2.2E-05					3.2E+01			
Exposure Medium Total											2.2E-05					3.2E+01			
Groundwater Total											2.2E-05					3.2E+01			
Total of Receptor Risks Across All Media										2.6E-05					Total of Receptor Hazards Across All Media	3.9E+01			

**Table 7.4.RME**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**CURRENT/FUTURE TRESPASSER - SEDIMENT/BANK SOIL**  
**REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Current/Future (RME)  
Receptor Population: Trespasser  
Receptor Age: Adolescent (Ages 7-16)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations					
					Value	Units	Intake		CSF		Cancer Risk	Intake		RfD		Hazard Quotient		
							Value	Units	Value	Units		Value	Units	Value	Units			
Surficial Sediment/ Bank Soil (0-0.5 ft bgs) in/along SBC	Surficial Sediment/ Bank Soil (0-0.5 ft bgs) in/along SBC	Surficial Sediment/ Bank Soil (0-0.5 ft bgs) in/along SBC	Ingestion	Aluminum	1.3E+04	mg/kg	3.9E-04	mg/kg-day	--	--	--	2.7E-03	mg/kg-day	1.0E+00	mg/kg-day	2.7E-03		
				Antimony	5.2E+00	mg/kg	1.5E-07	mg/kg-day	--	--	--	1.1E-06	mg/kg-day	4.0E-04	mg/kg-day	2.7E-03		
				Arsenic	3.9E+02	mg/kg	1.1E-05	mg/kg-day	1.5E+00	1/(mg/kg-day)	1.7E-05	8.0E-05	mg/kg-day	3.0E-04	mg/kg-day	2.7E-01		
				Barium	7.1E+03	mg/kg	2.1E-04	mg/kg-day	--	--	--	1.4E-03	mg/kg-day	2.0E-01	mg/kg-day	7.2E-03		
				Cadmium	4.3E+01	mg/kg	1.3E-06	mg/kg-day	--	--	--	8.8E-06	mg/kg-day	1.0E-03	mg/kg-day	8.8E-03		
				Chromium, Hexavalent	3.9E+00	mg/kg	1.1E-07	mg/kg-day	5.0E-01	1/(mg/kg-day)	5.7E-08	7.9E-07	mg/kg-day	3.0E-03	mg/kg-day	2.6E-04		
				Cobalt	9.9E+00	mg/kg	2.9E-07	mg/kg-day	--	--	--	2.0E-06	mg/kg-day	3.0E-04	mg/kg-day	6.7E-03		
				Copper	3.2E+02	mg/kg	9.2E-06	mg/kg-day	--	--	--	6.4E-05	mg/kg-day	4.0E-02	mg/kg-day	1.6E-03		
				Iron	3.8E+04	mg/kg	1.1E-03	mg/kg-day	--	--	--	7.7E-03	mg/kg-day	7.0E-01	mg/kg-day	1.1E-02		
				Lead	4.2E+02	mg/kg	1.2E-05	mg/kg-day	--	--	--	8.5E-05	mg/kg-day	--	--	--		
				Manganese	2.9E+02	mg/kg	8.4E-06	mg/kg-day	--	--	--	5.9E-05	mg/kg-day	2.4E-02	mg/kg-day	2.5E-03		
				Mercury (elemental)	1.0E+02	mg/kg	3.0E-06	mg/kg-day	--	--	--	2.1E-05	mg/kg-day	1.6E-04	mg/kg-day	1.3E-01		
				Mercury (inorganic)	9.1E+02	mg/kg	2.7E-05	mg/kg-day	--	--	--	1.9E-04	mg/kg-day	3.0E-04	mg/kg-day	6.2E-01		
				Vanadium	4.9E+01	mg/kg	1.4E-06	mg/kg-day	--	--	--	9.9E-06	mg/kg-day	7.0E-05	mg/kg-day	1.4E-01		
				Zinc	1.6E+03	mg/kg	4.6E-05	mg/kg-day	--	--	--	3.2E-04	mg/kg-day	3.0E-01	mg/kg-day	1.1E-03		
				Total PCBs	5.2E-01	mg/kg	1.5E-07	mg/kg-day	2.0E+00	1/(mg/kg-day)	3.0E-08	1.1E-07	mg/kg-day	2.0E-05	mg/kg-day	5.3E-03		
				Dioxin 2,3,7,8-TCDD TEQ	2.6E-05	mg/kg	7.5E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	9.8E-08	5.3E-12	mg/kg-day	1.0E-09	mg/kg-day	5.3E-03		
				Furan 2,3,7,8-TCDD TEQ	1.1E-04	mg/kg	3.3E-12	mg/kg-day	1.3E+05	1/(mg/kg-day)	4.2E-07	2.3E-11	mg/kg-day	1.0E-09	mg/kg-day	2.3E-02		
				Benz(a)pyrene TEQ	6.0E-01	mg/kg	1.8E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	1.3E-07	1.2E-07	mg/kg-day	--	--	--		
				Dichlorobenzene, 1,4-	2.1E+00	mg/kg	6.0E-08	mg/kg-day	5.4E-03	1/(mg/kg-day)	3.2E-10	4.2E-07	mg/kg-day	7.0E-02	mg/kg-day	6.0E-06		
				Hexachlorobenzene	7.1E-02	mg/kg	2.1E-09	mg/kg-day	1.6E+00	1/(mg/kg-day)	3.3E-09	1.5E-08	mg/kg-day	8.0E-04	mg/kg-day	1.8E-05		
				Chlorobenzene	1.3E+01	mg/kg	3.8E-07	mg/kg-day	--	--	--	2.7E-06	mg/kg-day	2.0E-02	mg/kg-day	1.3E-04		
				Chloroform	4.4E-01	mg/kg	1.3E-08	mg/kg-day	3.1E-02	1/(mg/kg-day)	4.0E-10	9.0E-08	mg/kg-day	1.0E-02	mg/kg-day	9.0E-06		
				Route Total							1.8E-05					1.2E+00		
Dermal Contact				Aluminum	1.3E+04	mg/kg	--	--	--	--	--	--	1.0E+00	mg/kg-day	--	--		
				Antimony	5.2E+00	mg/kg	--	--	--	--	--	--	6.0E-05	mg/kg-day	--	--		
				Arsenic	3.9E+02	mg/kg	4.2E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	6.4E-06	3.0E-05	mg/kg-day	3.0E-04	mg/kg-day	9.9E-02		
				Barium	7.1E+03	mg/kg	--	--	--	--	--	--	1.4E-02	mg/kg-day	--	--		
				Cadmium	4.3E+01	mg/kg	--	--	--	--	--	1.1E-07	mg/kg-day	2.5E-05	mg/kg-day	4.3E-03		
				Chromium, Hexavalent	3.9E+00	mg/kg	--	--	2.0E+01	1/(mg/kg-day)	--	--	--	7.5E-05	mg/kg-day	--		
				Cobalt	9.9E+00	mg/kg	--	--	--	--	--	--	3.0E-04	mg/kg-day	--	--		
				Copper	3.2E+02	mg/kg	--	--	--	--	--	--	4.0E-02	mg/kg-day	--	--		
				Iron	3.8E+04	mg/kg	--	--	--	--	--	--	7.0E-01	mg/kg-day	--	--		
				Lead	4.2E+02	mg/kg	--	--	--	--	--	--	--	--	--	--		
				Manganese	2.9E+02	mg/kg	--	--	--	--	--	--	9.6E-04	mg/kg-day	--	--		
				Mercury (elemental)	1.0E+02	mg/kg	--	--	--	--	--	--	1.6E-04	mg/kg-day	--	--		
				Mercury (inorganic)	9.1E+02	mg/kg	--	--	--	--	--	--	2.1E-05	mg/kg-day	--	--		
				Vanadium	4.9E+01	mg/kg	--	--	--	--	--	--	1.8E-06	mg/kg-day	--	--		
				Zinc	1.6E+03	mg/kg	--	--	--	--	--	--	3.0E-01	mg/kg-day	--	--		
				Total PCBs	5.2E-01	mg/kg	2.6E-08	mg/kg-day	2.0E+00	1/(mg/kg-day)	5.2E-08	1.8E-07	mg/kg-day	2.0E-05	mg/kg-day	9.1E-03		
				Dioxin 2,3,7,8-TCDD TEQ	2.6E-05	mg/kg	2.8E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	3.6E-08	1.9E-12	mg/kg-day	1.0E-09	mg/kg-day	1.9E-03		
				Furan 2,3,7,8-TCDD TEQ	1.1E-04	mg/kg	1.2E-12	mg/kg-day	1.3E+05	1/(mg/kg-day)	1.6E-07	8.4E-12	mg/kg-day	1.0E-09	mg/kg-day	8.4E-03		
				Benz(a)pyrene TEQ	6.0E-01	mg/kg	2.8E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	2.1E-07	--	--	--	--	--		
				Dichlorobenzene, 1,4-	2.1E+00	mg/kg	--	--	5.4E-03	1/(mg/kg-day)	--	--	--	7.0E-02	mg/kg-day	--		
				Hexachlorobenzene	7.1E-02	mg/kg	2.6E-09	mg/kg-day	1.6E+00	1/(mg/kg-day)	4.1E-09	1.8E-08	mg/kg-day	8.0E-04	mg/kg-day	2.2E-05		
				Chlorobenzene	1.3E+01	mg/kg	--	--	--	--	--	--	2.0E-02	mg/kg-day	--	--		
				Chloroform	4.4E-01	mg/kg	--	--	3.1E-02	1/(mg/kg-day)	--	--	--	1.0E-02	mg/kg-day	--		
				Route Total							6.8E-06					1.2E-01		
Sediment Total	Exposure Medium Total										2.5E-05					1.4E+00		
											2.5E-05					1.4E+00		
					Total of Receptor Risks Across All Media				2.5E-05				Total of Receptor Hazards Across All Media				1.4E+00	

**Table 7.4.CTE**  
**CALCULATION OF CHEMICAL CANCER RISKS AND NON-CANCER HAZARDS**  
**CURRENT/FUTURE TRESPASSER - SEDIMENT/BANK SOIL**  
**CENTRAL TENDENCY EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Current/Future (CTE)  
Receptor Population: Trespasser  
Receptor Age: Adolescent (Ages 7-16)

Medium	Exposure Medium	Exposure Point	Exposure Route	Chemical of Potential Concern	EPC		Cancer Risk Calculations						Non-Cancer Hazard Calculations						
					Value	Units	Intake		CSF		Cancer Risk	Value	Units	Intake		RfD		Hazard Quotient	
							Value	Units	Value	Units				Value	Units	Value	Units		
Surficial Sediment/ Bank Soil (0-0.5 ft bgs) in/along SBC	Surficial Sediment/ Bank Soil (0-0.5 ft bgs) in/along SBC	Surficial Sediment/ Bank Soil (0-0.5 ft bgs) in/along SBC	Ingestion	Aluminum	1.3E+04	mg/kg	7.3E-05	mg/kg-day	--	--	--	5.1E-04	mg/kg-day	1.0E+00	mg/kg-day	5.1E-04			
				Antimony	5.2E+00	mg/kg	2.9E-08	mg/kg-day	--	--	--	2.0E-07	mg/kg-day	4.0E-04	mg/kg-day	5.0E-04			
				Arsenic	3.9E+02	mg/kg	2.2E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	3.2E-06	1.5E-05	mg/kg-day	3.0E-04	mg/kg-day	5.0E-02			
				Barium	7.1E+03	mg/kg	3.9E-05	mg/kg-day	--	--	--	2.7E-04	mg/kg-day	2.0E-01	mg/kg-day	1.4E-03			
				Cadmium	4.3E+01	mg/kg	2.4E-07	mg/kg-day	--	--	--	1.6E-06	mg/kg-day	1.0E-03	mg/kg-day	1.6E-03			
				Chromium, Hexavalent	3.9E+00	mg/kg	2.1E-08	mg/kg-day	5.0E-01	1/(mg/kg-day)	1.1E-08	1.5E-07	mg/kg-day	3.0E-03	mg/kg-day	4.9E-05			
				Cobalt	9.9E+00	mg/kg	5.4E-08	mg/kg-day	--	--	--	3.8E-07	mg/kg-day	3.0E-04	mg/kg-day	1.3E-03			
				Copper	3.2E+02	mg/kg	1.7E-06	mg/kg-day	--	--	--	1.2E-05	mg/kg-day	4.0E-02	mg/kg-day	3.0E-04			
				Iron	3.8E+04	mg/kg	2.1E-04	mg/kg-day	--	--	--	1.4E-03	mg/kg-day	7.0E-01	mg/kg-day	2.1E-03			
				Lead	4.2E+02	mg/kg	2.3E-06	mg/kg-day	--	--	--	1.6E-05	mg/kg-day	--	--	--			
				Manganese	2.9E+02	mg/kg	1.6E-06	mg/kg-day	--	--	--	1.1E-05	mg/kg-day	2.4E-02	mg/kg-day	4.6E-04			
				Mercury (elemental)	1.0E+02	mg/kg	5.5E-07	mg/kg-day	--	--	--	3.9E-06	mg/kg-day	1.6E-04	mg/kg-day	2.4E-02			
				Mercury (inorganic)	9.1E+02	mg/kg	5.0E-06	mg/kg-day	--	--	--	3.5E-05	mg/kg-day	3.0E-04	mg/kg-day	1.2E-01			
				Vanadium	4.9E+01	mg/kg	2.7E-07	mg/kg-day	--	--	--	1.9E-06	mg/kg-day	7.0E-05	mg/kg-day	2.7E-02			
				Zinc	1.6E+03	mg/kg	8.6E-06	mg/kg-day	--	--	--	6.0E-05	mg/kg-day	3.0E-01	mg/kg-day	2.0E-04			
				Total PCBs	5.2E-01	mg/kg	2.8E-09	mg/kg-day	2.0E+00	1/(mg/kg-day)	5.7E-09	2.0E-08	mg/kg-day	2.0E-05	mg/kg-day	9.9E-04			
				Dioxin 2,3,7,8-TCDD TEQ	2.6E-05	mg/kg	1.4E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	1.8E-08	9.9E-13	mg/kg-day	1.0E-09	mg/kg-day	9.9E-04			
				Furan 2,3,7,8-TCDD TEQ	1.1E-04	mg/kg	6.1E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	8.0E-08	4.3E-12	mg/kg-day	1.0E-09	mg/kg-day	4.3E-03			
				Benz(a)pyrene TEQ	6.0E-01	mg/kg	3.3E-09	mg/kg-day	7.3E+00	1/(mg/kg-day)	2.4E-08	2.3E-08	mg/kg-day	--	--	--			
				Dichlorobenzene, 1,4-	2.1E+00	mg/kg	1.1E-08	mg/kg-day	5.4E-03	1/(mg/kg-day)	6.1E-11	7.9E-08	mg/kg-day	7.0E-02	mg/kg-day	1.1E-06			
				Hexachlorobenzene	7.1E-02	mg/kg	3.9E-10	mg/kg-day	1.6E+00	1/(mg/kg-day)	6.2E-10	2.7E-09	mg/kg-day	8.0E-04	mg/kg-day	3.4E-06			
				Chlorobenzene	1.3E+01	mg/kg	7.1E-08	mg/kg-day	--	--	--	5.0E-07	mg/kg-day	2.0E-02	mg/kg-day	2.5E-05			
				Chloroform	4.4E-01	mg/kg	2.4E-09	mg/kg-day	3.1E-02	1/(mg/kg-day)	7.5E-11	1.7E-08	mg/kg-day	1.0E-02	mg/kg-day	1.7E-06			
				Route Total								3.4E-06					2.3E-01		
Dermal Contact				Aluminum	1.3E+04	mg/kg	--	--	--	--	--	--	1.0E+00	mg/kg-day	--	--	--		
				Antimony	5.2E+00	mg/kg	--	--	--	--	--	--	6.0E-05	mg/kg-day	--	--	--		
				Arsenic	3.9E+02	mg/kg	1.6E-06	mg/kg-day	1.5E+00	1/(mg/kg-day)	2.4E-06	1.1E-05	mg/kg-day	3.0E-04	mg/kg-day	3.7E-02			
				Barium	7.1E+03	mg/kg	--	--	--	--	--	--	1.4E-02	mg/kg-day	--	--	--		
				Cadmium	4.3E+01	mg/kg	--	--	--	--	--	--	4.1E-08	mg/kg-day	2.5E-05	mg/kg-day	1.6E-03		
				Chromium, Hexavalent	3.9E+00	mg/kg	--	--	2.0E+01	1/(mg/kg-day)	--	--	--	7.5E-05	mg/kg-day	--	--	--	
				Cobalt	9.9E+00	mg/kg	--	--	--	--	--	--	--	3.0E-04	mg/kg-day	--	--	--	
				Copper	3.2E+02	mg/kg	--	--	--	--	--	--	--	4.0E-02	mg/kg-day	--	--	--	
				Iron	3.8E+04	mg/kg	--	--	--	--	--	--	--	7.0E-01	mg/kg-day	--	--	--	
				Lead	4.2E+02	mg/kg	--	--	--	--	--	--	--	--	--	--	--		
				Manganese	2.9E+02	mg/kg	--	--	--	--	--	--	--	9.6E-04	mg/kg-day	--	--	--	
				Mercury (elemental)	1.0E+02	mg/kg	--	--	--	--	--	--	--	1.6E-04	mg/kg-day	--	--	--	
				Mercury (inorganic)	9.1E+02	mg/kg	--	--	--	--	--	--	--	2.1E-05	mg/kg-day	--	--	--	
				Vanadium	4.9E+01	mg/kg	--	--	--	--	--	--	--	1.8E-06	mg/kg-day	--	--	--	
				Zinc	1.6E+03	mg/kg	--	--	--	--	--	--	--	3.0E-01	mg/kg-day	--	--	--	
				Total PCBs	5.2E-01	mg/kg	9.8E-09	mg/kg-day	2.0E+00	1/(mg/kg-day)	2.0E-08	6.8E-08	mg/kg-day	2.0E-05	mg/kg-day	3.4E-03			
				Dioxin 2,3,7,8-TCDD TEQ	2.6E-05	mg/kg	1.0E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	1.4E-08	7.3E-13	mg/kg-day	1.0E-09	mg/kg-day	7.3E-04			
				Furan 2,3,7,8-TCDD TEQ	1.1E-04	mg/kg	4.5E-13	mg/kg-day	1.3E+05	1/(mg/kg-day)	5.9E-08	3.2E-12	mg/kg-day	1.0E-09	mg/kg-day	3.2E-03			
				Benz(a)pyrene TEQ	6.0E-01	mg/kg	1.1E-08	mg/kg-day	7.3E+00	1/(mg/kg-day)	7.7E-08	--	--	--	--	--	--	--	
				Dichlorobenzene, 1,4-	2.1E+00	mg/kg	--	--	5.4E-03	1/(mg/kg-day)	--	--	--	7.0E-02	mg/kg-day	8.0E-04	mg/kg-day	8.4E-06	
				Hexachlorobenzene	7.1E-02	mg/kg	9.6E-10	mg/kg-day	1.6E+00	1/(mg/kg-day)	1.5E-09	6.7E-09	mg/kg-day	--	--	2.0E-02	mg/kg-day	--	
				Chlorobenzene	1.3E+01	mg/kg	--	--	--	--	--	--	--	1.0E-02	mg/kg-day	--	--	--	
				Chloroform	4.4E-01	mg/kg	--	--	3.1E-02	1/(mg/kg-day)	--	--	--	1.0E-02	mg/kg-day	--	--	--	
				Route Total								2.6E-06					4.6E-02		
Sediment Total				Exposure Medium Total								5.9E-06					2.8E-01		
				Sediment Total								5.9E-06			Total of Receptor Risks Across All Media	5.9E-06	Total of Receptor Hazards Across All Media	2.8E-01	

**TABLE 9.I.RME**  
**SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL AND OVERBURDEN GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

<b>Scenario Timeframe:</b> Future (RME)
<b>Receptor Population:</b> Commercial/Industrial Worker
<b>Receptor Age:</b> Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs) and P&V in Outdoor Air	Aluminum	--	--	--	--	CNS/Bone Blood	1.2E-02	--	8.4E-04	1.3E-02
			Antimony	--	--	--	--	Cardio/Derm/Develop (inh)/CNS (inh)	3.1E-02	--	--	3.1E-02
			Arsenic	1.2E-05	2.3E-06	1.2E-08	1.4E-05	Kidney	9.7E-03	--	1.3E-03	1.1E-02
			Barium	--	--	--	--	GI/Resp (inhalation)	1.9E-03	--	6.4E-05	1.9E-03
			Beryllium	--	--	1.1E-09	1.1E-09	Kidney	3.7E-03	9.9E-04	1.3E-04	4.9E-03
			Cadmium	--	--	8.3E-10	8.3E-10	GI/Blood/Resp (inhalation)	9.3E-04	--	9.7E-06	9.4E-04
			Chromium, Hexavalent	5.0E-07	--	2.9E-08	5.3E-07	Blood/Resp/Derm	2.0E-01	--	3.4E-03	2.0E-01
			Cobalt	--	--	6.6E-08	6.6E-08	GI/Kidney	4.3E-02	--	--	4.3E-02
			Copper	--	--	--	--	GI	8.8E-02	--	--	8.8E-02
			Iron	--	--	--	--	--	--	--	--	--
			Lead	--	--	--	--	CNS	3.2E-02	--	5.3E-03	3.7E-02
			Manganese	--	--	--	--	CNS	7.5E-01	--	4.2E+00	5.0E+00
			Mercury (elemental)	--	--	--	--	Immuno/Kidney/CNS (inh)	3.6E+00	--	1.2E-02	3.6E+00
			Mercury (inorganic)	--	--	--	--	Body Weight	7.3E-03	--	5.6E-04	7.8E-03
			Nickel	--	--	4.7E-09	4.7E-09	Derm	4.5E-04	--	--	4.5E-04
			Silver	--	--	--	--	Blood	7.1E-01	--	1.7E-04	7.1E-01
			Vanadium	--	--	--	--	Immuno	4.4E-02	--	--	4.4E-02
			Zinc	--	--	--	--	Immuno/Develop/Reprod/Dermal	1.9E-01	1.8E-01	--	3.7E-01
			Total PCBs	2.8E-06	2.6E-06	2.7E-10	5.3E-06	Immuno/Develop/Reprod/Dermal	1.2E-02	2.3E-03	1.0E-07	1.4E-02
			Dioxin 2,3,7,8-TCDD TEQ	5.5E-07	1.1E-07	5.6E-11	6.6E-07	Immuno/Develop/Reprod/Dermal	4.3E-01	8.6E-02	3.7E-06	5.2E-01
			Furan 2,3,7,8-TCDD TEQ	2.0E-05	4.0E-06	2.0E-09	2.4E-05	Body Weight/Resp (inhalation)	--	--	--	--
			Benzo(a)pyrene TEQ	1.1E-05	9.1E-06	5.5E-10	2.0E-05	Blood/Immuno	2.0E-04	1.3E-04	--	3.3E-04
			Bis(2-ethylhexyl) phthalate	2.0E-08	1.3E-08	1.2E-12	3.3E-08	Liver	6.5E-04	--	--	6.5E-04
			Dibenzofuran	--	--	--	--	Kidney	2.0E-06	--	5.4E-06	7.4E-06
			Dichlorobenzene, 1,4-	2.7E-10	--	1.7E-08	1.7E-08	Liver	7.0E-02	4.6E-02	--	1.2E-01
			Hexachlorobenzene	3.2E-05	2.1E-05	3.2E-09	5.3E-05	Liver	1.9E-03	1.3E-03	--	3.2E-03
			Hexachlorobutadiene	5.4E-08	3.5E-08	5.2E-12	8.9E-08	Kidney	4.7E-05	4.0E-05	2.1E-03	2.2E-03
			Naphthalene	--	--	7.8E-08	7.8E-08	Body Weight/Resp (inhalation)	1.3E-04	--	1.5E-03	1.7E-03
			Benzene	1.0E-08	--	1.3E-07	1.4E-07	Blood/Immuno	3.2E-05	--	4.0E-04	4.3E-04
			Chloroform	3.6E-09	--	3.2E-07	3.2E-07	Liver	3.4E-06	--	1.7E-05	2.0E-05
			Tetrachloroethylene (PCE)	6.6E-09	--	9.7E-09	1.6E-08	Liver	--	--	--	--
			Trichloroethylene (TCE)	5.8E-09	--	2.8E-07	2.9E-07	Immuno/Develop/Reprod/Dermal	3.3E-06	--	3.3E-05	3.6E-05
			Vinyl Chloride	2.5E-09	--	5.2E-09	7.7E-09	Immuno/Develop/Reprod/Dermal	6.3E+00	3.3E-01	4.2E+00	1.1E+01
			Chemical Total	7.8E-05	3.9E-05	9.6E-07	1.2E-04					1.1E+01
			Exposure Medium Total				1.2E-04					1.1E+01
<b>Surface Soil Total</b>							1.2E-04					1.1E+01
Groundwater (continued)	Overburden Groundwater	Potable Groundwater	Antimony	--	--	--	--	Blood	1.5E-01	--	--	1.5E-01
			Arsenic	1.4E-03	--	--	1.4E-03	Cardio/Derm	9.0E+00	--	--	9.0E+00
			Barium	--	--	--	--	Kidney	6.9E-01	--	--	6.9E-01
			Cadmium	--	--	--	--	Kidney	4.5E-01	--	--	4.5E-01
			Cobalt	--	--	--	--	Blood/Resp/Derm	6.2E+00	--	--	6.2E+00
			Iron	--	--	--	--	GI	4.8E+00	--	--	4.8E+00
			Manganese	--	--	--	--	CNS	8.9E+01	--	--	8.9E+01
			Mercury	--	--	--	--	CNS/Immuno/Kidney	7.6E+00	--	--	7.6E+00
			Methyl Mercury	--	--	--	--	CNS/Develop	1.6E+01	--	--	1.6E+01
			Vanadium	--	--	--	--	Blood	1.9E+01	--	--	1.9E+01
			Zinc	--	--	--	--	Blood	5.5E-02	--	--	5.5E-02
			Cyanide	--	--	--	--	Reprod	3.8E-02	--	--	3.8E-02
			Dioxin 2,3,7,8-TCDD TEQ	8.6E-06	--	--	8.6E-06	Immuno/Develop/Reprod/Dermal	1.9E-01	--	--	1.9E-01
			Furan 2,3,7,8-TCDD TEQ	7.3E-05	--	--	7.3E-05	Immuno/Develop/Reprod/Dermal	1.6E+00	--	--	1.6E+00
			Benz(a)anthracene	2.0E-06	--	--	2.0E-06	Body Weight	2.7E-01	--	--	--
			Naphthalene	--	--	--	--		--	--	--	2.7E-01
			Carbazole	1.0E-05	--	--	1.0E-05		--	--	--	--
			Chloroaniline, p-	3.1E-03	--	--	3.1E-03	Spleen	1.1E+01	--	--	1.1E+01

**TABLE 9.I.RME**  
**SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL AND OVERBURDEN GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (RME)
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
	(continued)	(continued)	Dibenzofuran	--	--	--	--	Kidney	1.6E-01	--	--	1.6E-01
			Dichlorobenzene, 1,2-	--	--	--	--	Liver	4.6E-01	--	--	4.6E-01
			Dichlorobenzene, 1,3-	--	--	--	--	Liver	2.2E-02	--	--	2.2E-02
			Dichlorobenzene, 1,4-	1.1E-05	--	--	1.1E-05	Liver	8.1E-02	--	--	8.1E-02
			Hexachlorobenzene	5.6E-06	--	--	5.6E-06	Liver	1.2E-02	--	--	1.2E-02
			Nitrobenzene	--	--	--	--	Blood/Reprod/Immuno	2.7E-01	--	--	2.7E-01
			Dichlorophenol, 2,4-	--	--	--	--	Immuno	3.8E-02	--	--	3.8E-02
			Chlorophenol, 2-	--	--	--	--	Reprod	5.1E-02	--	--	5.1E-02
			Pentachlorophenol	2.6E-06	--	--	2.6E-06	Liver/Reprod/Immuno	3.7E-03	--	--	3.7E-03
			Trichlorobenzene, 1,2,4-	2.9E-05	--	--	2.9E-05	Adrenal	2.8E-01	--	--	2.8E-01
			Benzene	1.6E-04	--	--	1.6E-04	Blood/Immuno	2.1E+00	--	--	2.1E+00
			Chlorobenzene	--	--	--	--	Liver	7.9E+00	--	--	7.9E+00
			Chloroform	3.8E-07	--	--	3.8E-07	Liver	3.4E-03	--	--	3.4E-03
			Dichloroethane, 1,1-	5.2E-08	--	--	5.2E-08	Kidney	1.3E-04	--	--	1.3E-04
			Dichloroethane, 1,2-	5.7E-07	--	--	5.7E-07	Kidney	8.8E-04	--	--	8.8E-04
			Ethylbenzene	1.2E-06	--	--	1.2E-06	Kidney/Liver	3.0E-03	--	--	3.0E-03
			Methylene Chloride	5.1E-05	--	--	5.1E-05	Liver	3.2E-01	--	--	3.2E-01
			Tetrachloroethylene (PCE)	1.3E-05	--	--	1.3E-05	Liver	6.8E-03	--	--	6.8E-03
			Vinyl Chloride	1.8E-06	--	--	1.8E-06	Liver	2.3E-03	--	--	2.3E-03
			Xylenes, Mixed	--	--	--	--	Body Weight	6.3E-03	--	--	6.3E-03
			Chemical Total	4.9E-03	--	--	4.9E-03		1.8E+02	--	--	1.8E+02
			Exposure Medium Total				4.9E-03					1.8E+02
			Groundwater Total				4.9E-03					1.8E+02
			Receptor Total				5.1E-03					1.9E+02

Total Risk Across All Media (Soil and GW) 5.1E-03Total Hazard Across All Media (Soil and GW) 1.9E+02**Notes:**

Shading cancer risk &gt; 1E-6 or hazard &gt; 1

Total Adrenal HI Across All Media	2.8E-01
Total Blood HI Across All Media	2.9E+01
Total Body Weight HI Across All Media	2.9E-01
Total Bone HI Across All Media	1.3E-02
Total Cardiovascular HI Across All Media	9.1E+00
Total Central Nervous System (CNS) HI Across All Media	1.2E+02
Total Dermal HI Across All Media	1.8E+01
Total Developmental HI Across All Media	1.9E+01
Total Gastrointestinal HI Across All Media	5.0E+00
Total Immunological HI Across All Media	1.6E+01
Total Kidney HI Across All Media	1.3E+01
Total Liver HI Across All Media	9.0E+00
Total Reproductive HI Across All Media	2.7E+00
Total Respiratory HI Across All Media	6.4E+00
Total Spleen HI Across All Media	1.1E+01

**TABLE 9.1.CTE**  
**SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL AND OVERBURDEN GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (CTE)
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs) and P&V in Outdoor Air	Aluminum	--	--	--	--	CNS/Bone	5.5E-03	--	7.6E-04	6.2E-03
			Antimony	--	--	--	--	Blood	1.4E-02	--	--	1.4E-02
			Arsenic	1.9E-06	7.5E-07	3.7E-09	2.6E-06	Cardio/Derm/Develop (inh)/CNS (inh)	3.3E-02	1.3E-02	4.5E-04	4.6E-02
			Barium	--	--	--	--	Kidney	4.4E-03	--	1.2E-03	5.6E-03
			Beryllium	--	--	3.6E-10	3.6E-10	GI/Resp (inhalation)	8.4E-04	--	5.8E-05	8.9E-04
			Cadmium	--	--	2.7E-10	2.7E-10	Kidney	1.7E-03	8.9E-04	1.2E-04	2.7E-03
			Chromium, Hexavalent	8.1E-08	--	9.4E-09	9.0E-08	GI/Blood/Resp (inhalation)	4.2E-04	--	8.7E-06	4.3E-04
			Cobalt	--	--	2.1E-08	2.1E-08	Blood/Resp/Derm	8.9E-02	--	3.1E-03	9.3E-02
			Copper	--	--	--	--	GI/Kidney	1.9E-02	--	--	1.9E-02
			Iron	--	--	--	--	GI	4.0E-02	--	--	4.0E-02
			Lead	--	--	--	--	--	--	--	--	--
			Manganese	--	--	--	--	CNS	1.4E-02	--	4.7E-03	1.9E-02
			Mercury (elemental)	--	--	--	--	CNS	3.4E-01	--	3.8E+00	4.1E+00
			Mercury (inorganic)	--	--	--	--	Immuno/Kidney/CNS (inh)	1.6E+00	--	1.1E-02	1.6E+00
			Nickel	--	--	1.5E-09	1.5E-09	Body Weight	3.3E-03	--	5.0E-04	3.8E-03
			Silver	--	--	--	--	Derm	2.0E-04	--	--	2.0E-04
			Vanadium	--	--	--	--	Blood	3.2E-01	--	1.5E-04	3.2E-01
			Zinc	--	--	--	--	Blood	2.0E-02	--	--	2.0E-02
			Total PCBs	4.5E-07	8.3E-07	8.8E-11	1.3E-06	Immuno	8.7E-02	1.6E-01	--	2.5E-01
			Dioxin 2,3,7,8-TCDD TEQ	8.9E-08	3.5E-08	1.8E-11	1.2E-07	Immuno/Develop/Reprod/Dermal	5.3E-03	2.1E-03	9.2E-08	7.4E-03
			Furan 2,3,7,8-TCDD TEQ	3.3E-06	1.3E-06	6.6E-10	4.6E-06	Immuno/Develop/Reprod/Dermal	2.0E-01	7.7E-02	3.4E-06	2.7E-01
			Benz(a)pyrene TEQ	1.7E-06	2.9E-06	1.8E-10	4.7E-06	--	--	--	--	
			Bis(2-ethylhexyl) phthalate	3.2E-09	4.3E-09	3.8E-13	7.5E-09	Liver	9.0E-05	1.2E-04	--	2.1E-04
			Dibenzofuran	--	--	--	--	Kidney	2.9E-04	--	--	2.9E-04
			Dichlorobenzene, 1,4-	4.4E-11	--	5.5E-09	5.5E-09	Liver	9.1E-07	--	4.8E-06	5.7E-06
			Hexachlorobenzene	5.2E-06	6.8E-06	1.0E-09	1.2E-05	Liver	3.1E-02	4.2E-02	--	7.3E-02
			Hexachlorobutadiene	8.7E-09	1.1E-08	1.7E-12	2.0E-08	Kidney	8.7E-04	1.1E-03	--	2.0E-03
			Naphthalene	--	--	2.5E-08	2.5E-08	Body Weight/Resp (inhalation)	2.1E-05	3.6E-05	1.9E-03	2.0E-03
			Benzene	1.6E-09	--	4.1E-08	4.3E-08	Blood/Immuno	5.7E-05	--	1.4E-03	1.4E-03
			Chloroform	5.8E-10	--	1.0E-07	1.0E-07	Liver	1.4E-05	--	3.6E-04	3.7E-04
			Tetrachloroethylene (PCE)	1.1E-09	--	3.1E-09	4.2E-09	Liver	1.5E-06	--	1.5E-05	1.7E-05
			Trichloroethylene (TCE)	9.4E-10	--	9.2E-08	9.3E-08	--	--	--	--	
			Vinyl Chloride	4.1E-10	--	1.7E-09	2.1E-09	Liver	1.5E-06	--	3.0E-05	3.1E-05
			Chemical Total	1.3E-05	1.3E-05	3.1E-07	2.6E-05		2.8E+00	3.0E-01	3.8E+00	7.0E+00
			Exposure Medium Total				2.6E-05					7.0E+00
Surface Soil Total							2.6E-05					7.0E+00
Groundwater (continued)	Overburden Groundwater	Potable Groundwater	Antimony	--	--	--	--	Blood	1.3E-01	--	--	1.3E-01
			Arsenic	4.7E-04	--	--	4.7E-04	Cardio/Derm	8.1E+00	--	--	8.1E+00
			Barium	--	--	--	--	Kidney	6.3E-01	--	--	6.3E-01
			Cadmium	--	--	--	--	Kidney	4.0E-01	--	--	4.0E-01
			Cobalt	--	--	--	--	Blood/Resp/Derm	5.6E+00	--	--	5.6E+00
			Iron	--	--	--	--	GI	4.4E+00	--	--	4.4E+00
			Manganese	--	--	--	--	CNS	8.0E+01	--	--	8.0E+01
			Mercury	--	--	--	--	CNS/Immuno/Kidney	6.8E+00	--	--	6.8E+00
			Methyl Mercury	--	--	--	--	CNS/Develop	1.5E+01	--	--	1.5E+01
			Vanadium	--	--	--	--	Blood	1.7E+01	--	--	1.7E+01
			Zinc	--	--	--	--	Blood	5.0E-02	--	--	5.0E-02
			Cyanide	--	--	--	--	Reprod	3.4E-02	--	--	3.4E-02
			Dioxin 2,3,7,8-TCDD TEQ	2.8E-06	--	--	2.8E-06	Immuno/Develop/Reprod/Dermal	1.7E-01	--	--	1.7E-01
			Furan 2,3,7,8-TCDD TEQ	2.4E-05	--	--	2.4E-05	Immuno/Develop/Reprod/Dermal	1.4E+00	--	--	1.4E+00
			Benz(a)anthracene	6.4E-07	--	--	6.4E-07		--	--	--	--
			Naphthalene	--	--	--	--	Body Weight	2.5E-01	--	--	2.5E-01
			Carbazole	3.2E-06	--	--	3.2E-06	--	--	--	--	--
			Chloroaniline, p-	1.0E-03	--	--	1.0E-03	Spleen	9.8E+00	--	--	9.8E+00
			Dibenzofuran	--	--	--	--	Kidney	1.4E-01	--	--	1.4E-01

**TABLE 9.1.CTE**  
**SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL AND OVERBURDEN GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Scenario Timeframe: Future (CTE)
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
			Dichlorobenzene, 1,2-	--	--	--	--	Liver	4.1E-01	--	--	4.1E-01
			Dichlorobenzene, 1,3-	--	--	--	--	Liver	1.9E-02	--	--	1.9E-02
			Dichlorobenzene, 1,4-	3.6E-06	--	--	3.6E-06	Liver	7.3E-02	--	--	7.3E-02
			Hexachlorobenzene	1.8E-06	--	--	1.8E-06	Liver	1.1E-02	--	--	1.1E-02
			Nitrobenzene	--	--	--	--	Blood/Reprod/Immuno	2.4E-01	--	--	2.4E-01
			Dichlorophenol, 2,4-	--	--	--	--	Immuno	3.4E-02	--	--	3.4E-02
			Chlorophenol, 2-	--	--	--	--	Reprod	4.6E-02	--	--	4.6E-02
			Pentachlorophenol	8.5E-07	--	--	8.5E-07	Liver/Reprod/Immuno	3.3E-03	--	--	3.3E-03
			Trichlorobenzene, 1,2,4-	9.4E-06	--	--	9.4E-06	Adrenal	2.5E-01	--	--	2.5E-01
			Benzene	5.3E-05	--	--	5.3E-05	Blood/Immuno	1.9E+00	--	--	1.9E+00
			Chlorobenzene	--	--	--	--	Liver	7.1E+00	--	--	7.1E+00
			Chloroform	1.2E-07	--	--	1.2E-07	Liver	3.1E-03	--	--	3.1E-03
			Dichloroethane, 1,1-	1.7E-08	--	--	1.7E-08	Kidney	1.1E-04	--	--	1.1E-04
			Dichloroethane, 1,2-	1.9E-07	--	--	1.9E-07	Kidney	7.9E-04	--	--	7.9E-04
			Ethylbenzene	3.8E-07	--	--	3.8E-07	Kidney/Liver	2.7E-03	--	--	2.7E-03
			Methylene Chloride	1.7E-05	--	--	1.7E-05	Liver	2.9E-01	--	--	2.9E-01
			Tetrachloroethylene (PCE)	4.2E-06	--	--	4.2E-06	Liver	6.1E-03	--	--	6.1E-03
			Vinyl Chloride	5.8E-07	--	--	5.8E-07	Liver	2.1E-03	--	--	2.1E-03
			Xylenes, Mixed	--	--	--	--	Body Weight	5.6E-03	--	--	5.6E-03
			Chemical Total	1.6E-03	--	--	1.6E-03		1.6E+02	--	--	1.6E+02
			Exposure Medium Total				1.6E-03					1.6E+02
			Groundwater Total				1.6E-03					1.6E+02
			Receptor Total				1.6E-03					1.7E+02

Total Risk Across All Media (Soil and GW) 1.6E-03

Total Hazard Across All Media (Soil and GW) 1.7E+02

**Notes:**

Shading cancer risk &gt; 1E-6 or hazard &gt; 1

Total Adrenal HI Across All Media	2.5E-01
Total Blood HI Across All Media	2.5E+01
Total Body Weight HI Across All Media	2.6E-01
Total Bone HI Across All Media	6.2E-03
Total Cardiovascular HI Across All Media	8.1E+00
Total Central Nervous System (CNS) HI Across All Media	1.1E+02
Total Dermal HI Across All Media	1.6E+01
Total Developmental HI Across All Media	1.7E+01
Total Gastrointestinal HI Across All Media	4.4E+00
Total Immunological HI Across All Media	1.3E+01
Total Kidney HI Across All Media	9.7E+00
Total Liver HI Across All Media	8.0E+00
Total Reproductive HI Across All Media	2.2E+00
Total Respiratory HI Across All Media	5.7E+00
Total Spleen HI Across All Media	9.8E+00

TABLE 9.2.RME  
 SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs  
 FUTURE SITE-SPECIFIC WORKER - SURFACE SOIL  
 REASONABLE MAXIMUM EXPOSURE  
 LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (RME)
Receptor Population: Site-Specific Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs) and P&V in Outdoor Air	Aluminum	--	--	--	--	CNS/Bone	4.9E-03	--	3.4E-04	5.2E-03
			Antimony	--	--	--	--	Blood	1.2E-02	--	--	1.2E-02
			Arsenic	4.7E-06	9.3E-07	4.6E-09	5.6E-06	Cardio/Derm/Develop (inh)/CNS (inh)	2.9E-02	5.8E-03	2.0E-04	3.5E-02
			Barium	--	--	--	--	Kidney	3.9E-03	--	5.4E-04	4.4E-03
			Beryllium	--	--	4.4E-10	4.4E-10	GI/Resp (inhalation)	7.4E-04	--	2.6E-05	7.7E-04
			Cadmium	--	--	3.3E-10	3.3E-10	Kidney	1.5E-03	3.9E-04	5.2E-05	1.9E-03
			Chromium, Hexavalent	2.0E-07	--	1.2E-08	2.1E-07	GI/Blood/Resp (inhalation)	3.7E-04	--	3.9E-06	3.8E-04
			Cobalt	--	--	2.6E-08	2.6E-08	Blood/Resp/Derm	8.0E-02	--	1.4E-03	8.1E-02
			Copper	--	--	--	--	GI/Kidney	1.7E-02	--	--	1.7E-02
			Iron	--	--	--	--	GI	3.5E-02	--	--	3.5E-02
			Lead	--	--	--	--	CNS	1.3E-02	--	2.1E-03	1.5E-02
			Manganese	--	--	--	--	CNS	3.0E-01	--	1.7E+00	2.0E+00
			Mercury (elemental)	--	--	--	--	Immuno/Kidney/CNS (inh)	1.4E+00	--	5.0E-03	1.4E+00
			Mercury (inorganic)	--	--	--	--	Body Weight	2.9E-03	--	2.2E-04	3.1E-03
			Nickel	--	--	--	--	Derm	1.8E-04	--	--	1.8E-04
			Silver	--	--	--	--	Blood	2.8E-01	--	6.8E-05	2.8E-01
			Vanadium	--	--	--	--	Blood	1.7E-02	--	--	1.7E-02
			Zinc	--	--	--	--	Immuno	7.8E-02	7.2E-02	--	1.5E-01
			Total PCBs	1.1E-06	1.0E-06	1.1E-10	2.1E-06	Immuno/Develop/Reprod/Dermal	4.7E-03	9.4E-04	4.1E-08	5.7E-03
			Dioxin 2,3,7,8-TCDD TEQ	2.2E-07	4.4E-08	2.2E-11	2.6E-07	Immuno/Develop/Reprod/Dermal	1.7E-01	3.4E-02	1.5E-06	2.1E-01
			Furan 2,3,7,8-TCDD TEQ	8.1E-06	1.6E-06	8.1E-10	9.6E-06	Body Weight/Resp (inhalation)	--	--	--	--
			Benzo(a)pyrene TEQ	4.2E-06	3.6E-06	2.2E-10	7.9E-06	Liver	8.0E-05	5.3E-05	--	1.3E-04
			Bis(2-ethylhexyl) phthalate	8.0E-09	5.3E-09	4.7E-13	1.3E-08	Kidney	2.6E-04	--	--	2.6E-04
			Dibenzofuran	--	--	--	--	Liver	8.1E-07	--	2.1E-06	2.9E-06
			Dichlorobenzene, 1,4-	1.1E-10	--	6.7E-09	6.8E-09	Kidney	2.8E-02	1.8E-02	--	4.6E-02
			Hexachlorobenzene	1.3E-05	8.4E-06	1.3E-09	2.1E-05	Kidney	7.7E-04	5.1E-04	--	1.3E-03
			Hexachlorobutadiene	2.1E-08	1.4E-08	2.1E-12	3.6E-08	Body Weight/Resp (inhalation)	1.9E-05	1.6E-05	8.5E-04	8.9E-04
			Naphthalene	--	--	3.1E-08	3.1E-08	Blood/Immuno	5.1E-05	--	6.1E-04	6.6E-04
			Benzene	4.0E-09	--	5.1E-08	5.5E-08	Liver	1.3E-05	--	1.6E-04	1.7E-04
			Chloroform	1.4E-09	--	1.3E-07	1.3E-07	Liver	1.4E-06	--	6.8E-06	8.2E-06
			Tetrachlorethylene (PCE)	2.6E-09	--	3.9E-09	6.5E-09	Liver	--	--	--	--
			Trichloroethylene (TCE)	2.3E-09	--	1.1E-07	1.2E-07	Liver	1.3E-06	--	1.3E-05	1.4E-05
			Vinyl Chloride	1.0E-09	--	2.1E-09	3.1E-09					
			Chemical Total	3.1E-05	1.6E-05	3.8E-07	4.7E-05		2.5E+00	1.3E-01	1.7E+00	4.4E+00
			Exposure Medium Total				4.7E-05					4.4E+00
			Surface Soil Total				4.7E-05					4.4E+00
			Receptor Total				4.7E-05					4.4E+00

Total Risk Across All Media 4.7E-05

Total Hazard Across All Media 4.4E+00

Total Blood HI Across All Media	3.9E-01
Total Body Weight HI Across All Media	4.0E-03
Total Bone HI Across All Media	5.2E-03
Total Cardiovascular HI Across All Media	3.5E-02
Total Central Nervous System (CNS) HI Across All Media	3.5E+00
Total Dermal HI Across All Media	3.3E-01
Total Developmental HI Across All Media	2.5E-01
Total Gastrointestinal HI Across All Media	5.3E-02
Total Immunological HI Across All Media	1.8E+00
Total Kidney HI Across All Media	1.5E+00
Total Liver HI Across All Media	4.7E-02
Total Respiratory HI Across All Media	8.3E-02

Notes:  
 Shading cancer risk > 1E-6 or hazard > 1

**TABLE 9.2.CTE**  
**SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs**  
**FUTURE SITE-SPECIFIC WORKER - SURFACE SOIL**  
**CENTRAL TENDENCY EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Scenario Timeframe: Future (CTE)
Receptor Population: Site-Specific Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs) and P&V in Outdoor Air	Aluminum	--	--	--	--	CNS/Bone	1.2E-03	--	1.7E-04	1.4E-03
			Antimony	--	--	--	--	Blood	3.1E-03	--	--	3.1E-03
			Arsenic	4.2E-07	1.7E-07	8.3E-10	5.9E-07	Cardio/Derm/Develop (inh)/CNS (inh)	7.3E-03	2.9E-03	1.0E-04	1.0E-02
			Barium	--	--	--	--	Kidney	9.7E-04	--	2.7E-04	1.2E-03
			Beryllium	--	--	7.9E-11	7.9E-11	GI/Resp (inhalation)	1.9E-04	--	1.3E-05	2.0E-04
			Cadmium	--	--	6.0E-11	6.0E-11	Kidney	3.7E-04	2.0E-04	2.6E-05	6.0E-04
			Chromium, Hexavalent	1.8E-08	--	2.1E-09	2.0E-08	GI/Blood/Resp (inhalation)	9.3E-05	--	1.9E-06	9.5E-05
			Cobalt	--	--	4.8E-09	4.8E-09	Blood/Resp/Derm	2.0E-02	--	6.9E-04	2.1E-02
			Copper	--	--	--	--	GI/Kidney	4.3E-03	--	--	4.3E-03
			Iron	--	--	--	--	GI	8.8E-03	--	--	8.8E-03
			Lead	--	--	--	--		--	--	--	--
			Manganese	--	--	--	--	CNS	3.2E-03	--	1.1E-03	4.2E-03
			Mercury (elemental)	--	--	--	--	CNS	7.5E-02	--	8.4E-01	9.2E-01
			Mercury (inorganic)	--	--	--	--	Immuno/Kidney/CNS (inh)	3.6E-01	--	2.5E-03	3.6E-01
			Nickel	--	--	--	--	Body Weight	7.3E-04	--	1.1E-04	8.4E-04
			Silver	--	--	--	--	Derm	4.5E-05	--	--	4.5E-05
			Vanadium	--	--	--	--	Blood	7.1E-02	--	3.4E-05	7.1E-02
			Zinc	--	--	--	--	Blood	4.4E-03	--	--	4.4E-03
			Total PCBs	1.0E-07	1.8E-07	2.0E-11	2.8E-07	Immuno/Develop/Reprod/Dermal	1.2E-03	4.7E-04	2.0E-08	1.7E-03
			Dioxin 2,3,7,8-TCDD TEQ	2.0E-08	7.8E-09	4.0E-12	2.8E-08	Immuno/Develop/Reprod/Dermal	4.3E-02	1.7E-02	7.5E-07	6.1E-02
			Furan 2,3,7,8-TCDD TEQ	7.2E-07	2.9E-07	1.5E-10	1.0E-06		--	--	--	--
			Benzo(a)pyrene TEQ	3.8E-07	6.5E-07	4.0E-11	1.0E-06		--	--	--	--
			Bis(2-ethylhexyl) phthalate	7.2E-10	9.5E-10	8.5E-14	1.7E-09					
			Dibenzofuran	--	--	--	--					
			Dichlorobenzene, 1,4-	9.8E-12	--	1.2E-09	1.2E-09					
			Hexachlorobenzene	1.2E-06	1.5E-06	2.3E-10	2.7E-06					
			Hexachlorobutadiene	1.9E-09	2.5E-09	3.8E-13	4.5E-09					
			Naphthalene	--	--	5.6E-09	5.6E-09					
			Benzene	3.6E-10	--	9.2E-09	9.5E-09					
			Chloroform	1.3E-10	--	2.3E-08	2.3E-08					
			Tetrachlorethylene (PCE)	2.4E-10	--	7.0E-10	9.4E-10					
			Trichloroethylene (TCE)	2.1E-10	--	2.0E-08	2.1E-08					
			Vinyl Chloride	9.1E-11	--	3.7E-10	4.6E-10					
			Chemical Total	2.8E-06	2.8E-06	6.9E-08	5.7E-06					
			Exposure Medium Total				5.7E-06					
			Surface Soil Total				5.7E-06					
			Receptor Total				5.7E-06					

Total Risk Across All Media 5.7E-06Total Hazard Across All Media 1.5E+00

Total Blood HI Across All Media	9.9E-02
Total Body Weight HI Across All Media	1.3E-03
Total Bone HI Across All Media	1.4E-03
Total Cardiovascular HI Across All Media	1.0E-02
Total Central Nervous System (CNS) HI Across All Media	1.3E+00
Total Dermal HI Across All Media	9.3E-02
Total Developmental HI Across All Media	7.2E-02
Total Gastrointestinal HI Across All Media	1.3E-02
Total Immunological HI Across All Media	4.8E-01
Total Kidney HI Across All Media	3.7E-01
Total Liver HI Across All Media	1.6E-02
Total Respiratory HI Across All Media	2.1E-02

**Notes:**  
 Shading cancer risk > 1E-6 or hazard > 1

**TABLE 9.3.RME**  
**SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (RME)
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient					
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total	
Mixed Soil (0 to 10 ft bgs)	Mixed Soil (0 to 10 ft bgs)	Surface Soil (0 to 10 ft bgs) and P&V in Outdoor Air	Aluminum	--	--	--	--	CNS/Bone	2.0E-02	--	4.2E-04	2.1E-02	
			Antimony	--	--	--	--	Blood	7.3E-02	--	--	7.3E-02	
			Arsenic	1.5E-06	1.3E-07	4.4E-10	1.6E-06	Cardio/Derm/Develop (inh)/CNS (inh)	2.3E-01	2.1E-02	4.8E-04	2.5E-01	
			Barium	--	--	--	--	Kidney	1.5E-02	--	6.3E-04	1.6E-02	
			Beryllium	--	--	2.0E-11	2.0E-11	GI/Resp (inhalation)	2.8E-03	--	2.9E-05	2.8E-03	
			Cadmium	--	--	2.1E-11	2.1E-11	Kidney	7.8E-03	9.4E-04	8.2E-05	8.8E-03	
			Chromium, Hexavalent	2.9E-08	--	5.1E-10	2.9E-08	GI/Blood/Resp (inhalation)	1.4E-03	--	4.2E-06	1.4E-03	
			Cobalt	--	--	1.3E-09	1.3E-09	Blood/Resp/Derm	3.1E-01	--	1.6E-03	3.1E-01	
			Copper	--	--	--	--	GI/Kidney	6.7E-02	--	--	6.7E-02	
			Iron	--	--	--	--	GI	1.4E-01	--	--	1.4E-01	
			Lead	--	--	--	--	CNS	5.0E-02	--	2.5E-03	5.3E-02	
			Manganese	--	--	--	--	CNS	1.2E+00	--	2.0E+00	3.2E+00	
			Mercury (elemental)	--	--	--	--	Immuno/Kidney/CNS (inh)	5.7E+00	--	6.0E-03	5.7E+00	
			Mercury (inorganic)	--	--	--	--	Body Weight	8.5E-03	--	2.0E-04	8.7E-03	
			Nickel	--	--	6.6E-11	6.6E-11	Derm	7.0E-04	--	--	7.0E-04	
			Silver	--	--	--	--	Blood	1.1E+00	--	7.9E-05	1.1E+00	
			Vanadium	--	--	--	--	Blood	6.2E-02	--	--	6.2E-02	
			Zinc	--	--	--	--	Immuno	2.9E-01	1.2E-01	--	4.1E-01	
			Total PCBs	1.7E-07	7.0E-08	4.9E-12	2.4E-07	Immuno/Develop/Reprod/Dermal	1.9E-02	1.7E-03	5.0E-08	2.1E-02	
			Dioxin 2,3,7,8-TCDD TEQ	3.6E-08	3.2E-09	1.1E-12	3.9E-08	Immuno/Develop/Reprod/Dermal	1.2E+00	1.1E-01	3.2E-06	1.3E+00	
			Furan 2,3,7,8-TCDD TEQ	2.3E-06	2.0E-07	6.9E-11	2.5E-06	--	--	--	--		
			Benzo(a)pyrene TEQ	4.1E-07	1.6E-07	6.5E-12	5.7E-07	Cardio	1.0E-03	--	--	1.0E-03	
			Methylnaphthalene, 2-	--	--	--	--	Spleen	5.4E-05	1.6E-05	--	7.0E-05	
			Chloroaniline, p-	6.2E-10	1.9E-10	--	8.0E-10	Body Weight/Resp (inhalation)	3.9E-04	1.5E-04	5.4E-03	6.0E-03	
			Naphthalene	--	--	7.9E-09	7.9E-09	Kidney	4.1E-04	1.6E-04	--	5.7E-04	
			Phenanthrene	--	--	--	--	Liver	3.2E-04	9.5E-05	--	4.1E-04	
			Bis(2-ethylhexyl) phthalate	1.3E-09	3.8E-10	2.3E-14	1.6E-09	Kidney	1.9E-04	--	6.9E-04	8.7E-04	
			Dibenzofuran	--	--	--	--	Liver	5.1E-05	--	4.1E-05	9.2E-05	
			Dichlorobenzene, 1,2-	--	--	--	--	Kidney	6.2E-02	1.9E-02	--	8.0E-02	
			Dichlorobenzene, 1,4-	2.8E-10	--	5.2E-09	5.5E-09	Kidney	8.3E-03	2.5E-03	--	1.1E-02	
			Hexachlorobenzene	1.1E-06	3.4E-07	3.4E-11	1.5E-06	Adrenal	9.8E-03	--	1.6E-01	1.7E-01	
			Hexachlorobutadiene	9.2E-09	2.8E-09	2.7E-13	1.2E-08	Blood/Immuno	1.1E-03	--	4.1E-03	5.2E-03	
			Trichlorobenzene, 1,2,4-	4.0E-08	--	--	4.0E-08	Liver	1.1E-04	--	6.8E-04	8.0E-04	
			Benzene	3.5E-09	--	1.4E-08	1.7E-08	Liver	1.5E-04	--	5.6E-04	7.1E-04	
			Chlorobenzene	--	--	--	--	Kidney/Liver/Develop (inhalation)	4.6E-06	--	7.8E-06	1.2E-05	
			Chloroform	6.7E-10	--	1.8E-08	1.9E-08	Liver	3.3E-04	--	8.7E-04	1.2E-03	
			Ethylbenzene	7.2E-11	--	2.8E-10	3.5E-10	Liver	2.9E-05	--	4.4E-05	7.4E-05	
			Methylene Chloride	2.1E-09	--	5.9E-09	8.0E-09	Liver	--	--	--	--	
			Tetrachloroethylene (PCE)	2.3E-09	--	1.0E-09	3.3E-09	Reprod	5.0E-06	--	1.5E-05	2.0E-05	
			Trichloroethylene (TCE)	5.3E-10	--	7.9E-09	8.4E-09	--	--	--	--		
			Vinyl Chloride	1.5E-10	--	9.5E-11	2.5E-10	--	--	--	--		
			Chemical Total	5.6E-06	9.1E-07	6.2E-08	6.5E-06	--	1.1E+01	2.8E-01	2.2E+00	1.3E+01	
Exposure Medium Total							6.5E-06				1.3E+01		
Surface Soil Total							6.5E-06				1.3E+01		
Groundwater (Overburden) Groundwater at the Water Table	Shallow (Overburden) Groundwater	Shallow (Overburden) Groundwater	Antimony	--	--	--	--	Blood	--	1.3E-02	--	1.3E-02	
			Arsenic	--	7.9E-07	--	7.9E-07	Cardio/Derm	--	1.2E-01	--	1.2E-01	
			Barium	--	--	--	--	Kidney	--	1.4E-01	--	1.4E-01	
			Cadmium	--	--	--	--	Kidney	--	1.2E-01	--	1.2E-01	
			Cobalt	--	--	--	--	Blood/Resp/Derm	--	3.4E-02	--	3.4E-02	
			Iron	--	--	--	--	GI	--	6.6E-02	--	6.6E-02	
			Manganese	--	--	--	--	CNS	--	3.1E+01	--	3.1E+01	
			Mercury	--	--	--	--	CNS/Immuno/Kidney	--	1.5E+00	--	1.5E+00	
			Methyl Mercury	--	--	--	--	CNS/Develop	--	2.3E-01	--	2.3E-01	
			Vanadium	--	--	--	--	Blood	--	1.0E+01	--	1.0E+01	
(continued)	Groundwater (Overburden)	Shallow (Overburden)	Zinc	--	--	--	--	Blood	--	4.5E-04	--	4.5E-04	
			Cyanide	--	--	--	--	Reprod	--	5.2E-04	--	5.2E-04	
			Dioxin 2,3,7,8-TCDD TEQ	--	3.8E-06	--	3.8E-06	Immuno/Develop/Reprod/Dermal	--	2.1E+00	--	2.1E+00	
			Furan 2,3,7,8-TCDD TEQ	--	2.7E-05	--	2.7E-05	Immuno/Develop/Reprod/Dermal	--	1.4E+01	--	1.4E+01	
			Benz(a)anthracene	--	6.0E-07	--	6.0E-07	--	--	--	--	--	

**TABLE 9.3.RME**  
**SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Scenario Timeframe: Future (RME)
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient					
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total	
Groundwater (continued)	Groundwater at the Water Table (continued)	Naphthalene Carbazole Chloroaniline, p- Dibenzofuran Dichlorobenzene, 1,2- Dichlorobenzene, 1,3- Dichlorobenzene, 1,4- Hexachlorobenzene Nitrobenzene Dichlorophenol, 2,4- Chlorophenol, 2- Pentachlorophenol Trichlorobenzene, 1,2,4- Benzene Chlorobenzene Chloroform Dichloroethane, 1,1- Dichloroethane, 1,2- Ethylbenzene Methylene Chloride Tetrachloroethylene (PCE) Vinyl Chloride Xylenes, Mixed		--	--	--	--	Body Weight	--	1.8E-01	--	1.8E-01	
				--	2.9E-07	--	2.9E-07	--	--	--	--	--	
				--	8.5E-06	--	8.5E-06	Spleen	--	7.4E-01	--	7.4E-01	
				--	--	--	--	Kidney	--	2.1E-01	--	2.1E-01	
				--	--	--	--	Liver	--	2.8E-01	--	2.8E-01	
				--	--	--	--	Liver	--	1.5E-02	--	1.5E-02	
				--	2.7E-07	--	2.7E-07	Liver	--	5.1E-02	--	5.1E-02	
				--	7.8E-07	--	7.8E-07	Liver	--	4.3E-02	--	4.3E-02	
				--	--	--	--	Blood/Reprod/Immuno	--	2.0E-02	--	2.0E-02	
				--	--	--	--	Immuno	--	1.1E-02	--	1.1E-02	
				--	--	--	--	Reprod	--	5.6E-03	--	5.6E-03	
				--	1.8E-07	--	1.8E-07	Liver/Reprod/Immuno	--	6.4E-03	--	6.4E-03	
				--	1.1E-06	--	1.1E-06	Adrenal	--	2.7E-01	--	2.7E-01	
				--	1.3E-06	--	1.3E-06	Blood/Immuno	--	4.2E-01	--	4.2E-01	
				--	--	--	--	Liver	--	3.1E+00	--	3.1E+00	
				--	1.4E-09	--	1.4E-09	Liver	--	3.2E-04	--	3.2E-04	
				--	1.9E-10	--	1.9E-10	Kidney	--	1.2E-05	--	1.2E-05	
				--	1.3E-09	--	1.3E-09	Kidney	--	5.1E-05	--	5.1E-05	
				--	3.2E-08	--	3.2E-08	Kidney/Liver	--	2.0E-03	--	2.0E-03	
				--	1.0E-07	--	1.0E-07	Liver	--	1.6E-02	--	1.6E-02	
				--	2.4E-07	--	2.4E-07	Liver	--	3.1E-03	--	3.1E-03	
				--	8.2E-09	--	8.2E-09	Liver	--	2.7E-04	--	2.7E-04	
				--	--	--	--	Body Weight	--	4.0E-03	--	4.0E-03	
			Chemical Total	--	4.5E-05	--	4.5E-05		--	6.5E+01	--	6.5E+01	
		Exposure Medium Total										6.5E+01	
Groundwater Total												6.5E+01	
Receptor Total												7.8E+01	

Total Risk Across All Media (Soil and GW) 5.1E-05

Total Hazard Across All Media (Soil and GW) 7.8E+01

**Notes:**  
 Shading cancer risk > 1E-6 or hazard > 1

Total Adrenal HI Across All Media	4.4E-01
Total Blood HI Across All Media	1.2E+01
Total Body Weight HI Across All Media	1.9E-01
Total Bone HI Across All Media	2.1E-02
Total Cardiovascular HI Across All Media	3.8E-01
Total Central Nervous System (CNS) HI Across All Media	4.2E+01
Total Dermal HI Across All Media	1.8E+01
Total Developmental HI Across All Media	1.8E+01
Total Gastrointestinal HI Across All Media	2.8E-01
Total Immunological HI Across All Media	2.6E+01
Total Kidney HI Across All Media	7.8E+00
Total Liver HI Across All Media	3.6E+00
Total Reproductive HI Across All Media	1.8E+01
Total Respiratory HI Across All Media	3.6E+01
Total Spleen HI Across All Media	7.4E-01

**TABLE 9.3.CTE**  
**SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (CTE)
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient					
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total	
Mixed Soil (0 to 10 ft bgs)	Mixed Soil (0 to 10 ft bgs)	Surface Soil (0 to 10 ft bgs) and P&V in Outdoor Air	Aluminum	--	--	--	--	CNS/Bone	1.0E-02	--	2.1E-04	1.0E-02	
			Antimony	--	--	--	--	Blood	3.7E-02	--	--	3.7E-02	
			Arsenic	7.4E-07	6.6E-08	2.2E-10	8.1E-07	Cardio/Derm/Develop (inh)/CNS (inh)	1.1E-01	1.0E-02	2.4E-04	1.3E-01	
			Barium	--	--	--	--	Kidney	7.5E-03	--	3.2E-04	7.9E-03	
			Beryllium	--	--	9.9E-12	9.9E-12	GI/Resp (inhalation)	1.4E-03	--	1.4E-05	1.4E-03	
			Cadmium	--	--	1.1E-11	1.1E-11	Kidney	3.9E-03	4.7E-04	4.1E-05	4.4E-03	
			Chromium, Hexavalent	1.4E-08	--	2.5E-10	1.5E-08	GI/Blood/Resp (inhalation)	6.8E-04	--	2.1E-06	6.8E-04	
			Cobalt	--	--	6.3E-10	6.3E-10	Blood/Resp/Derm	1.6E-01	--	8.1E-04	1.6E-01	
			Copper	--	--	--	--	GI/Kidney	3.3E-02	--	--	3.3E-02	
			Iron	--	--	--	--	GI	7.1E-02	--	--	7.1E-02	
			Lead	--	--	--	--	--	--	--	--	--	
			Manganese	--	--	--	--	CNS	2.5E-02	--	1.3E-03	2.6E-02	
			Mercury (elemental)	--	--	--	--	CNS	6.0E-01	--	1.0E+00	1.6E+00	
			Mercury (inorganic)	--	--	--	--	Immuno/Kidney/CNS (inh)	2.9E+00	--	3.0E-03	2.9E+00	
			Nickel	--	--	3.3E-11	3.3E-11	Body Weight	4.3E-03	--	9.9E-05	4.4E-03	
			Silver	--	--	--	--	Derm	3.5E-04	--	--	3.5E-04	
			Vanadium	--	--	--	--	Blood	5.4E-01	--	3.9E-05	5.4E-01	
			Zinc	--	--	--	--	Blood	3.1E-02	--	--	3.1E-02	
			Total PCBs	8.3E-08	3.5E-08	2.5E-12	1.2E-07	Immuno	1.4E-01	6.1E-02	--	2.1E-01	
			Dioxin 2,3,7,8-TCDD TEQ	1.8E-08	1.6E-09	5.5E-13	1.9E-08	Immuno/Develop/Reprod/Dermal	9.6E-03	8.7E-04	2.5E-08	1.0E-02	
			Furan 2,3,7,8-TCDD TEQ	1.1E-06	1.0E-07	3.4E-11	1.2E-06	Immuno/Develop/Reprod/Dermal	6.1E-01	5.5E-02	1.6E-06	6.6E-01	
			Benzo(a)pyrene TEQ	2.1E-07	8.0E-08	3.2E-12	2.9E-07	--	--	--	--		
			Methylnaphthalene, 2-	--	--	--	--	Cardio	5.2E-04	--	--	5.2E-04	
			Chloroaniline, p-	3.1E-10	9.3E-11	--	4.0E-10	Spleen	2.7E-05	8.1E-06	--	3.5E-05	
			Naphthalene	--	--	3.9E-09	3.9E-09	Body Weight/Resp (inhalation)	2.0E-04	7.6E-05	2.7E-03	3.0E-03	
			Phenanthrene	--	--	--	--	Kidney	2.1E-04	8.0E-05	--	2.8E-04	
			Bis(2-ethylhexyl) phthalate	6.3E-10	1.9E-10	1.1E-14	8.2E-10	Liver	1.6E-04	4.8E-05	--	2.1E-04	
			Dibenzofuran	--	--	--	--	Kidney	1.9E-03	--	--	1.9E-03	
			Dichlorobenzene, 1,2-	--	--	--	--	Liver	9.3E-05	--	3.4E-04	4.4E-04	
			Dichlorobenzene, 1,4-	1.4E-10	--	2.6E-09	2.7E-09	Liver	2.6E-05	--	2.1E-05	4.6E-05	
			Hexachlorobenzene	5.7E-07	1.7E-07	1.7E-11	7.4E-07	Liver	3.1E-02	9.3E-03	--	4.0E-02	
			Hexachlorobutadiene	4.6E-09	1.4E-09	1.4E-13	6.0E-09	Kidney	4.1E-03	1.2E-03	--	5.4E-03	
			Trichlorobenzene, 1,2,4-	2.0E-08	--	--	2.0E-08	Adrenal	4.9E-03	--	7.9E-02	8.3E-02	
			Benzene	1.8E-09	--	6.8E-09	8.5E-09	Blood/Immuno	5.6E-04	--	2.0E-03	2.6E-03	
			Chlorobenzene	--	--	--	--	Liver	5.7E-05	--	3.4E-04	4.0E-04	
			Chloroform	3.3E-10	--	9.0E-09	9.4E-09	Liver	7.5E-05	--	2.8E-04	3.6E-04	
			Ethylbenzene	3.6E-11	--	1.4E-10	1.8E-10	Kidney/Liver/Develop (inhalation)	2.3E-06	--	3.9E-06	6.2E-06	
			Methylene Chloride	1.1E-09	--	2.9E-09	4.0E-09	Liver	1.7E-04	--	4.4E-04	6.0E-04	
			Tetrachloroethylene (PCE)	1.1E-09	--	5.1E-10	1.6E-09	Liver	1.5E-05	--	2.2E-05	3.7E-05	
			Trichloroethylene (TCE)	2.7E-10	--	3.9E-09	4.2E-09	--	--	--	--		
			Vinyl Chloride	7.7E-11	--	4.7E-11	1.2E-10	Liver	2.5E-06	--	7.5E-06	1.0E-05	
			Chemical Total	2.8E-06	4.6E-07	3.1E-08	3.3E-06		5.3E+00	1.4E-01	1.1E+00	6.5E+00	
Exposure Medium Total							3.3E-06				6.5E+00		
Surface Soil Total							3.3E-06				6.5E+00		
Groundwater (Overburden) Groundwater at the Water Table	Shallow	Shallow (Overburden) Groundwater at the Water Table	Antimony	--	--	--	--	Blood	6.7E-03	--	--	6.7E-03	
			Arsenic	--	4.0E-07	--	4.0E-07	Cardio/Derm	--	6.2E-02	--	6.2E-02	
			Barium	--	--	--	--	Kidney	--	6.8E-02	--	6.8E-02	
			Cadmium	--	--	--	--	Kidney	--	6.2E-02	--	6.2E-02	
			Cobalt	--	--	--	--	Blood/Resp/Derm	--	1.7E-02	--	1.7E-02	
			Iron	--	--	--	--	GI	--	3.3E-02	--	3.3E-02	
			Manganese	--	--	--	--	CNS	--	1.5E+01	--	1.5E+01	
			Mercury	--	--	--	--	CNS/Immuno/Kidney	--	7.5E-01	--	7.5E-01	
			Methyl Mercury	--	--	--	--	CNS/Develop	--	1.1E-01	--	1.1E-01	
			Vanadium	--	--	--	--	Blood	--	5.0E+00	--	5.0E+00	
Groundwater	Shallow	Shallow	Zinc	--	--	--	--	Blood	--	2.3E-04	--	2.3E-04	
			Cyanide	--	--	--	--	Reprod	--	2.6E-04	--	2.6E-04	
			Dioxin 2,3,7,8-TCDD TEQ	--	1.9E-06	--	1.9E-06	Immuno/Develop/Reprod/Dermal	--	1.0E+00	--	1.0E+00	
			Furan 2,3,7,8-TCDD TEQ	--	1.3E-05	--	1.3E-05	Immuno/Develop/Reprod/Dermal	--	7.1E+00	--	7.1E+00	
			Benz(a)anthracene	--	3.0E-07	--	3.0E-07	--	--	--	--		

**TABLE 9.3.CTE**  
**SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Scenario Timeframe:</b> Future (CTE)
<b>Receptor Population:</b> Construction/Utility Worker
<b>Receptor Age:</b> Adult

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
(continued)	(Overburden Groundwater (continued))	(Overburden) Groundwater at the Water Table (continued)	Naphthalene	--	--	--	--	Body Weight	--	8.8E-02	--	8.8E-02
			Carbazole	--	1.5E-07	--	1.5E-07	--	--	--	--	--
			Chloroaniline, p-	--	4.2E-06	--	4.2E-06	Spleen	--	3.7E-01	--	3.7E-01
			Dibenzofuran	--	--	--	--	Kidney	--	1.1E-01	--	1.1E-01
			Dichlorobenzene, 1,2-	--	--	--	--	Liver	--	1.4E-01	--	1.4E-01
			Dichlorobenzene, 1,3-	--	--	--	--	Liver	--	7.7E-03	--	7.7E-03
			Dichlorobenzene, 1,4-	--	1.4E-07	--	1.4E-07	Liver	--	2.5E-02	--	2.5E-02
			Hexachlorobenzene	--	3.9E-07	--	3.9E-07	Liver	--	2.1E-02	--	2.1E-02
			Nitrobenzene	--	--	--	--	Blood/Reprod/Immuno	--	1.0E-02	--	1.0E-02
			Dichlorophenol, 2,4-	--	--	--	--	Immuno	--	5.4E-03	--	5.4E-03
			Chlorophenol, 2-	--	--	--	--	Reprod	--	2.8E-03	--	2.8E-03
			Pentachlorophenol	--	9.1E-08	--	9.1E-08	Liver/Reprod/Immuno	--	3.2E-03	--	3.2E-03
			Trichlorobenzene, 1,2,4-	--	5.6E-07	--	5.6E-07	Adrenal	--	1.3E-01	--	1.3E-01
			Benzene	--	6.7E-07	--	6.7E-07	Blood/Immuno	--	2.1E-01	--	2.1E-01
			Chlorobenzene	--	--	--	--	Liver	--	1.5E+00	--	1.5E+00
			Chloroform	--	7.1E-10	--	7.1E-10	Liver	--	1.6E-04	--	1.6E-04
			Dichloroethane, 1,1-	--	9.6E-11	--	9.6E-11	Kidney	--	5.9E-06	--	5.9E-06
			Dichloroethane, 1,2-	--	6.6E-10	--	6.6E-10	Kidney	--	2.5E-05	--	2.5E-05
			Ethylbenzene	--	1.6E-08	--	1.6E-08	Kidney/Liver	--	1.0E-03	--	1.0E-03
			Methylene Chloride	--	5.0E-08	--	5.0E-08	Liver	--	7.8E-03	--	7.8E-03
			Tetrachloroethylene (PCE)	--	1.2E-07	--	1.2E-07	Liver	--	1.5E-03	--	1.5E-03
			Vinyl Chloride	--	4.1E-09	--	4.1E-09	Liver	--	1.3E-04	--	1.3E-04
			Xylenes, Mixed	--	--	--	--	Body Weight	--	2.0E-03	--	2.0E-03
			Chemical Total	--	2.2E-05	--	2.2E-05		--	3.2E+01	--	3.2E+01
			Exposure Medium Total				2.2E-05					3.2E+01
			Groundwater Total				2.2E-05					3.2E+01
			Receptor Total				2.6E-05					3.9E+01

Total Risk Across All Media (Soil and GW) 2.6E-05

Total Hazard Across All Media (Soil and GW) 3.9E+01

**Notes:**  
 Shading cancer risk > 1E-6 or hazard > 1

Total Adrenal HI Across All Media	2.2E-01
Total Blood HI Across All Media	6.0E+00
Total Body Weight HI Across All Media	9.7E-02
Total Bone HI Across All Media	1.0E-02
Total Cardiovascular HI Across All Media	1.9E-01
Total Central Nervous System (CNS) HI Across All Media	2.1E+01
Total Dermal HI Across All Media	9.2E+00
Total Developmental HI Across All Media	9.1E+00
Total Gastrointestinal HI Across All Media	1.4E-01
Total Immunological HI Across All Media	1.3E+01
Total Kidney HI Across All Media	3.9E+00
Total Liver HI Across All Media	1.8E+00
Total Reproductive HI Across All Media	8.9E+00
Total Respiratory HI Across All Media	1.8E+01
Total Spleen HI Across All Media	3.7E-01

**TABLE 9.4.RME**  
**SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs**  
**CURRENT/FUTURE TRESPASSER - SEDIMENT/BANK SOIL**  
**REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

<b>Scenario Timeframe:</b> Current/Future (RME)
<b>Receptor Population:</b> Trespasser
<b>Receptor Age:</b> Adolescent (Ages 7-16)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient						
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total		
Surficial Sediment/ Bank Soil (0-0.5 ft bgs) in/along SBC	Surficial Sediment/ Bank Soil (0-0.5 ft bgs) in/along SBC	Surficial Sediment/ Bank Soil in/along SBC	Aluminum	--	--	--	--	CNS/Bone	2.7E-03	--	--	2.7E-03		
			Antimony	--	--	--	--	Blood	2.7E-03	--	--	2.7E-03		
			Arsenic	1.7E-05	6.4E-06	--	2.4E-05	Cardio/Derm	2.7E-01	9.9E-02	--	3.7E-01		
			Barium	--	--	--	--	Kidney	7.2E-03	--	--	7.2E-03		
			Cadmium	--	--	--	--	Kidney	8.8E-03	4.3E-03	--	1.3E-02		
			Chromium, Hexavalent	5.7E-08	--	--	5.7E-08	GI/Blood	2.6E-04	--	--	2.6E-04		
			Cobalt	--	--	--	--	Blood/Resp/Derm	6.7E-03	--	--	6.7E-03		
			Copper	--	--	--	--	GI/Kidney	1.6E-03	--	--	1.6E-03		
			Iron	--	--	--	--	GI	1.1E-02	--	--	1.1E-02		
			Lead	--	--	--	--	--	--	--	--	--		
			Manganese	--	--	--	--	CNS	2.5E-03	--	--	2.5E-03		
			Mercury (elemental)	--	--	--	--	CNS	1.3E-01	--	--	1.3E-01		
			Mercury (inorganic)	--	--	--	--	Immuno/Kidney	6.2E-01	--	--	6.2E-01		
			Vanadium	--	--	--	--	Blood	1.4E-01	--	--	1.4E-01		
			Zinc	--	--	--	--	Blood	1.1E-03	--	--	1.1E-03		
			Total PCBs	3.0E-08	5.2E-08	--	8.2E-08	Immuno	5.3E-03	9.1E-03	--	1.4E-02		
			Dioxin 2,3,7,8-TCDD TEQ	9.8E-08	3.6E-08	--	1.3E-07	Immuno/Develop/Reprod/Dermal	5.3E-03	1.9E-03	--	7.2E-03		
			Furan 2,3,7,8-TCDD TEQ	4.2E-07	1.6E-07	--	5.8E-07	Immuno/Develop/Reprod/Dermal	2.3E-02	8.4E-03	--	3.1E-02		
			Benz(a)pyrene TEQ	1.3E-07	2.1E-07	--	3.3E-07	--	--	--	--	--		
			Dichlorobenzene, 1,4-	3.2E-10	--	--	3.2E-10	Liver	6.0E-06	--	--	6.0E-06		
			Hexachlorobenzene	3.3E-09	4.1E-09	--	7.4E-09	Liver	1.8E-05	2.2E-05	--	4.0E-05		
			Chlorobenzene	--	--	--	--	Liver	1.3E-04	--	--	1.3E-04		
			Chloroform	4.0E-10	--	--	4.0E-10	Liver	9.0E-06	--	--	9.0E-06		
			Chemical Total	1.8E-05	6.8E-06	--	2.5E-05		1.2E+00	1.2E-01	--	1.4E+00		
<b>Exposure Medium Total</b>						--	2.5E-05					1.4E+00		
<b>Surface Soil Total</b>						--	2.5E-05					1.4E+00		
<b>Receptor Total</b>						--	2.5E-05					1.4E+00		

Total Risk Across All Media 2.5E-05Total Risk Across All Media 1.4E+00

**Notes:**  
Shading cancer risk > 1E-6 or hazard > 1

Total Blood HI Across All Media	1.5E-01
Total Bone HI Across All Media	2.7E-03
Total Cardiovascular HI Across All Media	3.7E-01
Total Central Nervous System (CNS) HI Across All Media	1.3E-01
Total Dermal HI Across All Media	4.1E-01
Total Developmental HI Across All Media	3.9E-02
Total Gastrointestinal HI Across All Media	1.3E-02
Total Immunological HI Across All Media	6.7E-01
Total Kidney HI Across All Media	6.4E-01
Total Liver HI Across All Media	1.9E-04
Total Respiratory HI Across All Media	6.7E-03

**TABLE 9.4.CTE**  
**SUMMARY OF RECEPTOR RISKS AND HAZARDS FOR COPCs**  
**CURRENT/FUTURE TRESPASSER - SEDIMENT/BANK SOIL**  
**CENTRAL TENDENCY EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

<b>Scenario Timeframe:</b> Current/Future (CTE)
<b>Receptor Population:</b> Trespasser
<b>Receptor Age:</b> Adolescent (Ages 7-16)

Medium	Exposure Medium	Exposure Point	Chemical of Potential Concern	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient						
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total		
Surficial Sediment/ Bank Soil (0-0.5 ft bgs) in/along SBC	Surficial Sediment/ Bank Soil (0-0.5 ft bgs) in/along SBC	Surficial Sediment/ Bank Soil in/along SBC	Aluminum	--	--	--	--	CNS/Bone	5.1E-04	--	--	5.1E-04		
			Antimony	--	--	--	--	Blood	5.0E-04	--	--	5.0E-04		
			Arsenic	3.2E-06	2.4E-06	--	5.6E-06	Cardio/Derm	5.0E-02	3.7E-02	--	8.7E-02		
			Barium	--	--	--	--	Kidney	1.4E-03	--	--	1.4E-03		
			Cadmium	--	--	--	--	Kidney	1.6E-03	1.6E-03	--	3.3E-03		
			Chromium, Hexavalent	1.1E-08	--	--	1.1E-08	GI/Blood	4.9E-05	--	--	4.9E-05		
			Cobalt	--	--	--	--	Blood/Resp/Derm	1.3E-03	--	--	1.3E-03		
			Copper	--	--	--	--	GI/Kidney	3.0E-04	--	--	3.0E-04		
			Iron	--	--	--	--	GI	2.1E-03	--	--	2.1E-03		
			Lead	--	--	--	--	--	--	--	--	--		
			Manganese	--	--	--	--	CNS	4.6E-04	--	--	4.6E-04		
			Mercury (elemental)	--	--	--	--	CNS	2.4E-02	--	--	2.4E-02		
			Mercury (inorganic)	--	--	--	--	Immuno/Kidney	1.2E-01	--	--	1.2E-01		
			Vanadium	--	--	--	--	Blood	2.7E-02	--	--	2.7E-02		
			Zinc	--	--	--	--	Blood	2.0E-04	--	--	2.0E-04		
			Total PCBs	5.7E-09	2.0E-08	--	2.5E-08	Immuno	9.9E-04	3.4E-03	--	4.4E-03		
			Dioxin 2,3,7,8-TCDD TEQ	1.8E-08	1.4E-08	--	3.2E-08	Immuno/Develop/Reprod/Dermal	9.9E-04	7.3E-04	--	1.7E-03		
			Furan 2,3,7,8-TCDD TEQ	8.0E-08	5.9E-08	--	1.4E-07	Immuno/Develop/Reprod/Dermal	4.3E-03	3.2E-03	--	7.4E-03		
			Benz(a)pyrene TEQ	2.4E-08	7.7E-08	--	1.0E-07	--	--	--	--	--		
			Dichlorobenzene, 1,4-	6.1E-11	--	--	6.1E-11	Liver	1.1E-06	--	--	1.1E-06		
			Hexachlorobenzene	6.2E-10	1.5E-09	--	2.2E-09	Liver	3.4E-06	8.4E-06	--	1.2E-05		
			Chlorobenzene	--	--	--	--	Liver	2.5E-05	--	--	2.5E-05		
			Chloroform	7.5E-11	--	--	7.5E-11	Liver	1.7E-06	--	--	1.7E-06		
			Chemical Total	3.4E-06	2.6E-06	--	5.9E-06		2.3E-01	4.6E-02	--	2.8E-01		
Exposure Medium Total							5.9E-06					2.8E-01		
Surface Soil Total							5.9E-06					2.8E-01		
Receptor Total							5.9E-06					2.8E-01		

Total Risk Across All Media 5.9E-06Total Risk Across All Media 2.8E-01

**Notes:**  
Shading cancer risk > 1E-6 or hazard > 1

Total Blood HI Across All Media	2.9E-02
Total Bone HI Across All Media	5.1E-04
Total Cardiovascular HI Across All Media	8.7E-02
Total Central Nervous System (CNS) HI Across All Media	2.5E-02
Total Dermal HI Across All Media	9.8E-02
Total Developmental HI Across All Media	9.2E-03
Total Gastrointestinal HI Across All Media	2.4E-03
Total Immunological HI Across All Media	1.3E-01
Total Kidney HI Across All Media	1.2E-01
Total Liver HI Across All Media	4.0E-05
Total Respiratory HI Across All Media	1.3E-03

**TABLE 10.1.RME  
RISK SUMMARY**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL AND OVERBURDEN GROUNDWATER  
REASONABLE MAXIMUM EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

<b>Scenario Timeframe:</b> Future (RME)
<b>Receptor Population:</b> Commercial/Industrial Worker
<b>Receptor Age:</b> Adult

Medium	Exposure Medium	Exposure Point	Constituent of Potential Concern <sup>(1)</sup>	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient						
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total		
Surface Soil	Surface Soil (0 to 2 ft bgs) and P&V in Outdoor Air		Arsenic	1.2E-05	2.3E-06	1.2E-08	1.4E-05	Cardio/Derm/Develop (inh)/CNS (inh)	7.3E-02	1.4E-02	5.0E-04	n/a		
			Cobalt	--	--	6.6E-08	n/a	Blood/Resp/Derm	2.0E-01	--	3.4E-03	2.0E-01		
			Mercury (elemental)	--	--	--	--	CNS	7.5E-01	--	4.2E+00	5.0E+00		
			Mercury (inorganic)	--	--	--	--	Immuno/Kidney/CNS (inh)	3.6E+00	--	1.2E-02	3.6E+00		
			Vanadium	--	--	--	--	Blood	7.1E-01	--	1.7E-04	7.1E-01		
			Total PCBs	2.8E-06	2.6E-06	2.7E-10	5.3E-06	Immuno	1.9E-01	1.8E-01	--	3.7E-01		
			Furan 2,3,7,8-TCDD TEQ	2.0E-05	4.0E-06	2.0E-09	2.4E-05	Immuno/Develop/Reprod/Dermal	4.3E-01	8.6E-02	3.7E-06	5.2E-01		
			Benz(a)pyrene TEQ	1.1E-05	9.1E-06	5.5E-10	2.0E-05	--	--	--	--			
			Hexachlorobenzene	3.2E-05	2.1E-05	3.2E-09	5.3E-05	Liver	7.0E-02	4.6E-02	--	1.2E-01		
			Chemical Total	7.7E-05	3.9E-05	1.8E-08	1.2E-04		6.0E+00	3.1E-01	4.2E+00	1.0E+01		
Exposure Medium Total							1.2E-04					1.0E-01		
Surface Soil Total							1.2E-04					1.0E-01		
Groundwater	Overburden Groundwater	Potable Groundwater	Antimony	--	--	--	--	Blood	1.5E-01	--	--	1.5E-01		
			Arsenic	1.4E-03	--	--	1.4E-03	Cardio/Derm	9.0E+00	--	--	9.0E+00		
			Barium	--	--	--	--	Kidney	6.9E-01	--	--	6.9E-01		
			Cadmium	--	--	--	--	Kidney	4.5E-01	--	--	4.5E-01		
			Cobalt	--	--	--	--	Blood/Resp/Derm	6.2E+00	--	--	6.2E+00		
			Iron	--	--	--	--	GI	4.8E+00	--	--	4.8E+00		
			Manganese	--	--	--	--	CNS	8.9E+01	--	--	8.9E+01		
			Mercury	--	--	--	--	CNS/Immuno/Kidney	7.6E+00	--	--	7.6E+00		
			Methyl Mercury	--	--	--	--	CNS/Develop	1.6E+01	--	--	1.6E+01		
			Vanadium	--	--	--	--	Blood	1.9E+01	--	--	1.9E+01		
			Dioxin 2,3,7,8-TCDD TEQ	8.6E-06	--	--	8.6E-06	Immuno/Develop/Reprod/Dermal	1.9E-01	--	--	1.9E+01		
			Furan 2,3,7,8-TCDD TEQ	7.3E-05	--	--	7.3E-05	Immuno/Develop/Reprod/Dermal	1.6E+00	--	--	1.6E+00		
			Benz(a)anthracene	2.0E-06	--	--	2.0E-06	--	--	--	--			
			Naphthalene	--	--	--	--	Body Weight	2.7E-01	--	--	2.7E-01		
			Carbozole	1.0E-05	--	--	1.0E-05		--	--	--			
			Chloroaniline, p-	3.1E-03	--	--	3.1E-03	Spleen	1.1E+01	--	--	1.1E+01		
			Dibenzofuran	--	--	--	--	Kidney	1.6E-01	--	--	1.6E-01		
			Dichlorobenzene, 1,2-	--	--	--	--	Liver	4.6E-01	--	--	4.6E-01		
			Dichlorobenzene, 1,4-	1.1E-05	--	--	1.1E-05	Liver	8.1E-02	--	--	n/a		
			Hexachlorobenzene	5.6E-06	--	--	5.6E-06	Liver	1.2E-02	--	--	n/a		
			Nitrobenzene	--	--	--	--	Blood/Reprod/Immuno	2.7E-01	--	--	2.7E-01		
			Pentachlorophenol	2.6E-06	--	--	2.6E-06	Liver/Reprod/Immuno	3.7E-03	--	--	n/a		
			Benzene	1.6E-04	--	--	1.6E-04	Blood/Immuno	2.1E+00	--	--	2.1E+00		
			Chlorobenzene	--	--	--	--	Liver	7.9E+00	--	--	7.9E+00		
			Ethylbenzene	1.2E-06	--	--	1.2E-06	Kidney/Liver	3.0E-03	--	--	n/a		
			Methylene Chloride	5.1E-05	--	--	5.1E-05	Liver	3.2E-01	--	--	3.2E-01		
			Tetrachloroethylene (PCE)	1.3E-05	--	--	1.3E-05	Liver	6.8E-03	--	--	n/a		
			Vinyl Chloride	1.8E-06	--	--	1.8E-06	Liver	2.3E-03	--	--	n/a		
			Chemical Total	4.9E-03	--	--	4.9E-03		1.8E+02	--	--	1.8E+02		
Exposure Medium Total							4.9E-03					1.8E+02		
Groundwater Total							4.9E-03					1.8E+02		
Receptor Total							5.0E-03					1.9E+02		

Total Risk Across All Media (SS and GW)<sup>(1)</sup> 5.0E-03Total Hazard Across All Media (SS and GW)<sup>(2)</sup> 1.9E+02**Notes:**

(1) This table presents the constituents of potential concern with a cancer risk greater than 1E-6 (one-in-one-million) and/or a noncancer hazard index (HI) greater than 0.1.

(2) The total risks and hazards are based solely on the constituents presented in this table.

RME = reasonable maximum exposure

ft bgs = feet below ground surface

P&amp;V = particulates and vapors

SS = surface soil (0 to 2 ft bgs)

GW = groundwater

HI = hazard index

n/a = health endpoint is not a risk-driver for the COC

Total Adrenal HI Across All Media	--
Total Blood HI Across All Media	2.9E+01
Total Body Weight HI Across All Media	--
Total Bone HI Across All Media	--
Total Cardiovascular HI Across All Media	9.0E+00
Total Central Nervous System (CNS) HI Across All Media	1.2E+02
Total Dermat HI Across All Media	1.8E+01
Total Developmental HI Across All Media	1.9E+01
Total Gastrointestinal HI Across All Media	4.8E+00
Total Immunological HI Across All Media	1.6E+01
Total Kidney HI Across All Media	1.3E+01
Total Liver HI Across All Media	8.8E+00
Total Reproductive HI Across All Media	2.6E+00
Total Respiratory HI Across All Media	6.4E+00
Total Spleen HI Across All Media	1.1E+01

**TABLE 10.1.CTE**  
**RISK SUMMARY**  
**FUTURE COMMERCIAL/INDUSTRIAL WORKER - SURFACE SOIL AND OVERBURDEN GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

Scenario Timeframe: Future (CTE)
Receptor Population: Commercial/Industrial Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Constituent of Potential Concern <sup>(1)</sup>	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient						
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total		
Surface Soil	Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs) and P&V in Outdoor Air	Arsenic	1.9E-06	7.5E-07	3.7E-09	2.6E-06	Cardio/Derm/Develop (inh)/CNS (inh) Immuno/Kidney/CNS (inh) Immuno/Develop/Reprod/Dermal Liver	3.3E-02	1.3E-02	4.5E-04	n/a		
			Mercury (elemental)	--	--	--	--		3.4E-01	--	3.8E+00	4.1E+00		
			Mercury (inorganic)	--	--	--	--		1.6E+00	--	1.1E-02	1.6E+00		
			Vanadium	--	--	--	--		3.2E-01	--	1.5E-04	3.2E-01		
			Total PCBs	4.5E-07	8.3E-07	8.8E-11	1.3E-06		8.7E-02	1.6E-01	--	2.5E-01		
			Furan 2,3,7,8-TCDD TEQ	3.3E-06	1.3E-06	6.6E-10	4.6E-06		2.0E-01	7.7E-02	3.4E-06	2.7E-01		
			Benzo(a)pyrene TEQ	1.7E-06	2.9E-06	1.8E-10	4.7E-06		--	--	--	--		
			Hexachlorobenzene	5.2E-06	6.8E-06	1.0E-09	1.2E-05		3.1E-02	4.2E-02	--	n/a		
			Chemical Total	1.2E-05	1.3E-05	5.7E-09	2.5E-05		2.6E+00	2.4E-01	3.8E+00	6.6E+00		
			Exposure Medium Total				2.5E-05					6.6E+00		
Surface Soil Total							2.5E-05					6.6E+00		
Groundwater	Overburden Groundwater	Potable Groundwater	Antimony	--	--	--	--	Blood Cardio/Derm Kidney Blood/Resp/Derm GI CNS CNS/Immuno/Kidney CNS/Develop Blood Immuno/Develop/Reprod/Dermal Immuno/Develop/Reprod/Dermal Body Weight	1.3E-01	--	--	1.3E-01		
			Arsenic	4.7E-04	--	--	4.7E-04		8.1E+00	--	--	8.1E+00		
			Barium	--	--	--	--		6.3E-01	--	--	6.3E-01		
			Cadmium	--	--	--	--		4.0E-01	--	--	4.0E-01		
			Cobalt	--	--	--	--		5.6E+00	--	--	5.6E+00		
			Iron	--	--	--	--		4.4E+00	--	--	4.4E+00		
			Manganese	--	--	--	--		8.0E+01	--	--	8.0E+01		
			Mercury	--	--	--	--		6.8E+00	--	--	6.8E+00		
			Methyl Mercury	--	--	--	--		1.5E+01	--	--	1.5E+01		
			Vanadium	--	--	--	--		1.7E+01	--	--	1.7E+01		
			Dioxin 2,3,7,8-TCDD TEQ	2.8E-06	--	--	2.8E-06		1.7E+01	--	--	1.7E+01		
			Furan 2,3,7,8-TCDD TEQ	2.4E-05	--	--	2.4E-05		1.4E+00	--	--	1.4E+00		
			Naphthalene	--	--	--	--		2.5E-01	--	--	2.5E-01		
			Carbazole	3.2E-06	--	--	3.2E-06		--	--	--	--		
			Chloroaniline, p-	1.0E-03	--	--	1.0E-03		9.8E+00	--	--	9.8E+00		
			Dibenzofuran	--	--	--	--		1.4E-01	--	--	1.4E-01		
			Dichlorobenzene, 1,2-	--	--	--	--		4.1E-01	--	--	4.1E-01		
			Dichlorobenzene, 1,4-	3.6E-06	--	--	3.6E-06		7.3E-02	--	--	n/a		
			Hexachlorobenzene	1.8E-06	--	--	1.8E-06		1.1E-02	--	--	n/a		
			Nitrobenzene	--	--	--	--		2.4E-01	--	--	2.4E-01		
			Benzene	5.3E-05	--	--	5.3E-05		1.9E+00	--	--	1.9E+00		
			Chlorobenzene	--	--	--	--		7.1E+00	--	--	7.1E+00		
			Methylene Chloride	1.7E-05	--	--	1.7E-05		2.9E-01	--	--	2.9E-01		
			Tetrachloroethylene (PCE)	4.2E-06	--	--	4.2E-06		6.1E-03	--	--	n/a		
			Chemical Total	1.6E-03	--	--	1.6E-03		1.6E+02	--	--	1.6E+02		
Exposure Medium Total						1.6E-03						1.6E+02		
Groundwater Total						1.6E-03						1.6E+02		
Receptor Total						1.6E-03						1.7E+02		

Total Risk Across All Media (SS and GW)<sup>(2)</sup> 1.6E-03Total Hazard Across All Media (SS and GW)<sup>(2)</sup> 1.7E+02**Notes:**

- (1) This table presents the constituents of potential concern with a cancer risk greater than 1E-6 (one-in-one-million) and/or a noncancer hazard index (HI) greater than 0.1.  
 (2) The total risks and hazards are based solely on the constituents presented in this table.

CTE = central tendency exposure  
 ft bgs = feet below ground surface

P&amp;V = particulates and vapors

SS = surface soil (0 to 2 ft bgs)

GW = groundwater

HI = hazard index

n/a = health endpoint is not a risk-driver for the COC

Total Adrenal HI Across All Media	--
Total Blood HI Across All Media	2.5E+01
Total Body Weight HI Across All Media	--
Total Bone HI Across All Media	--
Total Cardiovascular HI Across All Media	8.1E+00
Total Central Nervous System (CNS) HI Across All Media	1.1E+02
Total Dermal HI Across All Media	1.6E+01
Total Developmental HI Across All Media	1.7E+01
Total Gastrointestinal HI Across All Media	4.4E+00
Total Immunological HI Across All Media	1.3E+01
Total Kidney HI Across All Media	9.6E+00
Total Liver HI Across All Media	7.8E+00
Total Reproductive HI Across All Media	2.1E+00
Total Respiratory HI Across All Media	5.6E+00
Total Spleen HI Across All Media	9.8E+00

**TABLE 10.2.RME  
RISK SUMMARY**  
**FUTURE SITE-SPECIFIC WORKER - SURFACE SOIL**  
**REASONABLE MAXIMUM EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Scenario Timeframe:</b> Future (RME)
<b>Receptor Population:</b> Site-Specific Worker
<b>Receptor Age:</b> Adult

Medium	Exposure Medium	Exposure Point	Constituent of Potential Concern <sup>(1)</sup>	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient						
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total		
Surface Soil	Surface Soil (0 to 2 ft bgs) and P&V in Outdoor Air	Arsenic Mercury (elemental) Mercury (inorganic) Vanadium Total PCBs Furan 2,3,7,8-TCDD TEQ Benzo(a)pyrene TEQ Hexachlorobenzene	4.7E-06	9.3E-07	4.6E-09	5.6E-06	Cardio/Derm/Develop (inh)/CNS (inh)	2.9E-02	5.8E-03	2.0E-04	n/a			
			--	--	--	--	CNS	3.0E-01	--	1.7E+00	2.0E+00			
			--	--	--	--	Immuno/Kidney/CNS (inh)	1.4E+00	--	5.0E-03	1.4E+00			
			--	--	--	--	Blood	2.8E-01	--	6.8E-05	2.8E-01			
			1.1E-06	1.0E-06	1.1E-10	2.1E-06	Immuno	7.8E-02	7.2E-02	--	1.5E-01			
			8.1E-06	1.6E-06	8.1E-10	9.6E-06	Immuno/Develop/Reprod/Dermal	1.7E-01	3.4E-02	1.5E-06	2.1E-01			
			4.2E-06	3.6E-06	2.2E-10	7.9E-06	--	--	--	--	--			
			1.3E-05	8.4E-06	1.3E-09	2.1E-05	Liver	2.8E-02	1.8E-02	--	n/a			
			Chemical Total	3.1E-05	1.6E-05	7.0E-09	4.6E-05		2.3E+00	1.1E-01	1.7E+00	4.1E+00		
			Exposure Medium Total				4.6E-05					4.1E+00		
Surface Soil Total							4.6E-05					4.1E+00		
Receptor Total							4.6E-05					4.1E+00		

Total Risk Across All Media (SS) <sup>(2)</sup> 4.6E-05Total Hazard Across All Media (SS) <sup>(2)</sup> 4.1E+00**Notes:**

(1) This table presents the constituents of potential concern with a cancer risk greater than 1E-6 (one-in-one-million) and/or a noncancer hazard index (HI) greater than 0.1.

(2) The total risks and hazards are based solely on the constituents presented in this table.

RME = reasonable maximum exposure

ft bgs = feet below ground surface

P&amp;V = particulates and vapors

SS = surface soil (0 to 2 ft bgs)

HI = hazard index

n/a = health endpoint is not a risk-driver for the COC

Total Blood HI Across All Media	--
Total Body Weight HI Across All Media	--
Total Bone HI Across All Media	--
Total Cardiovascular HI Across All Media	--
Total Central Nervous System (CNS) HI Across All Media	3.4E+00
Total Dermal HI Across All Media	--
Total Developmental HI Across All Media	--
Total Gastrointestinal HI Across All Media	--
Total Immunological HI Across All Media	1.8E+00
Total Kidney HI Across All Media	1.4E+00
Total Liver HI Across All Media	--
Total Respiratory HI Across All Media	--

**TABLE 10.2.CTE  
RISK SUMMARY**  
**FUTURE SITE-SPECIFIC WORKER - SURFACE SOIL**  
**REASONABLE MAXIMUM EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Scenario Timeframe:</b> Future (CTE)
<b>Receptor Population:</b> Site-Specific Worker
<b>Receptor Age:</b> Adult

Medium	Exposure Medium	Exposure Point	Constituent of Potential Concern <sup>(1)</sup>	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient						
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total		
Surface Soil	Surface Soil (0 to 2 ft bgs)	Surface Soil (0 to 2 ft bgs) and P&V in Outdoor Air	Mercury (elemental)	--	--	--	--	CNS	7.5E-02	--	8.4E-01	9.2E-01		
			Mercury (inorganic)	--	--	--	--	Immuno/Kidney/CNS (inh)	3.6E-01	--	2.5E-03	3.6E-01		
			Furan 2,3,7,8-TCDD TEQ	7.2E-07	2.9E-07	1.5E-10	1.0E-06	Immuno/Develop/Reprod/Dermal	4.3E-02	1.7E-02	7.5E-07	n/a		
			Benzo(a)pyrene TEQ	3.8E-07	6.5E-07	4.0E-11	1.0E-06	--	--	--	--	--		
			Hexachlorobenzene	1.2E-06	1.5E-06	2.3E-10	2.7E-06	Liver	7.0E-03	9.2E-03	--	n/a		
			Chemical Total	2.3E-06	2.5E-06	4.1E-10	4.7E-06		4.3E-01	0.0E+00	8.5E-01	1.3E+00		
			Exposure Medium Total				4.7E-06					1.3E+00		
Surface Soil Total							4.7E-06					1.3E+00		
Receptor Total							4.7E-06					1.3E+00		

Total Risk Across All Media (SS) <sup>(2)</sup> 4.7E-06Total Hazard Across All Media (SS) <sup>(2)</sup> 1.3E+00**Notes:**

(1) This table presents the constituents of potential concern with a cancer risk greater than 1E-6 (one-in-one-million) and/or a noncancer hazard index (HI) greater than 0.1.

(2) The total risks and hazards are based solely on the constituents presented in this table.

CTE = central tendency exposure

ft bgs = feet below ground surface

P&amp;V = particulates and vapors

SS = surface soil (0 to 2 ft bgs)

HI = hazard index

n/a = health endpoint is not a risk-driver for the COC

Total Blood HI Across All Media	--
Total Body Weight HI Across All Media	--
Total Bone HI Across All Media	--
Total Cardiovascular HI Across All Media	--
Total Central Nervous System (CNS) HI Across All Media	1.3E+00
Total Dermal HI Across All Media	--
Total Developmental HI Across All Media	--
Total Gastrointestinal HI Across All Media	--
Total Immunological HI Across All Media	--
Total Kidney HI Across All Media	--
Total Liver HI Across All Media	--
Total Respiratory HI Across All Media	--

**TABLE 10.3.RME  
RISK SUMMARY**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Scenario Timeframe:</b> Future (RME)
<b>Receptor Population:</b> Construction/Utility Worker
<b>Receptor Age:</b> Adult

Medium	Exposure Medium	Exposure Point	Constituent of Potential Concern <sup>(1)</sup>	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient						
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total		
Mixed Soil (0 to 10 ft bgs)	Mixed Soil (0 to 10 ft bgs)	Mixed Soil (0 to 10 ft bgs) and P&V in Outdoor Air	Arsenic	1.5E-06	1.3E-07	4.4E-10	1.6E-06	Cardio/Derm/Develop (inh)/CNS (inh) Blood/Resp/Derm GI CNS Immuno/Kidney/CNS (inh) Blood Immuno Immuno/Develop/Reprod/Dermal Liver Adrenal	2.3E-01	2.1E-02	4.8E-04	2.5E-01		
			Cobalt	--	--	1.3E-09	n/a		3.1E-01	--	1.6E-03	3.1E-01		
			Iron	--	--	--	--		1.4E-01	--	--	1.4E-01		
			Mercury (elemental)	--	--	--	--		1.2E+00	--	2.0E+00	3.2E+00		
			Mercury (inorganic)	--	--	--	--		5.7E+00	--	6.0E-03	5.7E+00		
			Vanadium	--	--	--	--		1.1E+00	--	7.9E-05	1.1E+00		
			Total PCBs	1.7E-07	7.0E-08	4.9E-12	n/a		2.9E-01	1.2E-01	--	4.1E-01		
			Furan 2,3,7,8-TCDD TEQ	2.3E-06	2.0E-07	6.9E-11	2.5E-06		1.2E+00	1.1E-01	3.2E-06	1.3E+00		
			Hexachlorobenzene	1.1E-06	3.4E-07	3.4E-11	1.5E-06		6.2E-02	1.9E-02	--	n/a		
			Trichlorobenzene, 1,2,4-	4.0E-08	--	--	n/a		9.8E-03	--	1.6E-01	1.7E-01		
			Chemical Total	4.9E-06	6.8E-07	5.5E-10	5.5E-06		1.0E+01	2.5E-01	2.2E-00	1.3E+01		
Exposure Medium Total							5.5E-06					1.3E+01		
Surface Soil Total							5.5E-06					1.3E+01		
Groundwater	Shallow (Overburden) Groundwater	Shallow (Overburden) Groundwater at the Water Table	Arsenic	--	7.9E-07	--	n/a	Cardio/Derm Kidney Kidney CNS CNS/Immuno/Kidney CNS/Develop Blood Immuno/Develop/Reprod/Dermal Immuno/Develop/Reprod/Dermal Body Weight Spleen Kidney Liver Adrenal Blood/Immuno Liver	--	1.2E-01	--	1.2E-01		
			Barium	--	--	--	--		--	1.4E-01	--	1.4E-01		
			Cadmium	--	--	--	--		--	1.2E-01	--	1.2E-01		
			Manganese	--	--	--	--		--	3.1E+01	--	3.1E+01		
			Mercury	--	--	--	--		--	1.5E+00	--	1.5E+00		
			Methyl Mercury	--	--	--	--		--	2.3E-01	--	2.3E-01		
			Vanadium	--	--	--	--		--	1.0E+01	--	1.0E+01		
			Dioxin 2,3,7,8-TCDD TEQ	--	3.8E-06	--	3.8E-06		--	2.1E+00	--	2.1E+00		
			Furan 2,3,7,8-TCDD TEQ	--	2.7E-05	--	2.7E-05		--	1.4E+01	--	1.4E+01		
			Naphthalene	--	--	--	--		--	1.8E-01	--	1.8E-01		
			Chloroaniline, p-	--	8.5E-06	--	8.5E-06		--	7.4E-01	--	7.4E-01		
			Dibenzofuran	--	--	--	--		--	2.1E-01	--	2.1E-01		
			Dichlorobenzene, 1,2-	--	--	--	--		--	2.8E-01	--	2.8E-01		
			Trichlorobenzene, 1,2,4-	--	1.1E-06	--	1.1E-06		--	2.7E-01	--	2.7E-01		
			Benzene	--	1.3E-06	--	1.3E-06		--	4.2E-01	--	4.2E-01		
			Chlorobenzene	--	--	--	--		--	3.1E+00	--	3.1E+00		
			Chemical Total	--	4.1E-05	--	4.1E-05		--	6.4E+01	--	6.4E+01		
Exposure Medium Total							4.1E-05					6.4E+01		
Groundwater Total							4.1E-05					6.4E+01		
Receptor Total							4.7E-05					7.7E+01		

Total Risk Across All Media (MS and GW) <sup>(2)</sup> 4.7E-05Total Hazard Across All Media (MS and GW) <sup>(2)</sup> 7.7E+01**Notes:**

(1) This table presents the constituents of potential concern with a cancer risk greater than 1E-6 (one-in-one-million) and/or a noncancer hazard index (HI) greater than 0.1.

(2) The total risks and hazards are based solely on the constituents presented in this table.

RME = reasonable maximum exposure

ft bgs = feet below ground surface

P&amp;V = particulates and vapors

MS = mixed soil (0 to 10 ft bgs)

GW = groundwater

Total Adrenal HI Across All Media

--

Total Blood HI Across All Media

1.2E+01

Total Body Weight HI Across All Media

--

Total Bone HI Across All Media

--

Total Cardiovascular HI Across All Media

--

Total Central Nervous System (CNS) HI Across All Media

4.2E+01

Total Dermal HI Across All Media

1.8E+01

Total Developmental HI Across All Media

1.8E+01

Total Gastrointestinal HI Across All Media

--

**TABLE 10.3.RME  
RISK SUMMARY**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**REASONABLE MAXIMUM EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Scenario Timeframe:</b> Future (RME)
<b>Receptor Population:</b> Construction/Utility Worker
<b>Receptor Age:</b> Adult

Medium	Exposure Medium	Exposure Point	Constituent of Potential Concern <sup>(1)</sup>	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient				
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total
HI = hazard index								Total Immunological HI Across All Media				2.6E+01
n/a = health endpoint is not a risk-driver for the COC								Total Kidney HI Across All Media				7.7E+00
								Total Liver HI Across All Media				3.3E+00
								Total Reproductive HI Across All Media				1.8E+01
								Total Respiratory HI Across All Media				--
								Total Spleen HI Across All Media				--

**TABLE 10.3.CTE**  
**RISK SUMMARY**  
**FUTURE CONSTRUCTION/UTILITY WORKER - MIXED SOIL AND SHALLOW (OVERBURDEN) GROUNDWATER**  
**CENTRAL TENDENCY EXPOSURE**  
LCP Chemicals, Inc. Superfund Site - Linden, New Jersey

Scenario Timeframe: Future (CTE)
Receptor Population: Construction/Utility Worker
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Constituent of Potential Concern <sup>(1)</sup>	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient						
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total		
Mixed Soil (0 to 10 ft bgs)	Mixed Soil (0 to 10 ft bgs)	Mixed Soil (0 to 10 ft bgs) and P&V in Outdoor Air	Arsenic	7.4E-07	6.6E-08	2.2E-10	n/a	Cardio/Derm/Develop (inh)/CNS (inh)	1.1E-01	1.0E-02	2.4E-04	1.3E-01		
			Cobalt	--	--	6.3E-10	n/a	Blood/Resp/Derm	1.6E-01	--	8.1E-04	1.6E-01		
			Mercury (elemental)	--	--	--	--	CNS	6.0E-01	--	1.0E+00	1.6E+00		
			Mercury (inorganic)	--	--	--	--	Immuno/Kidney/CNS (inh)	2.9E+00	--	3.0E-03	2.9E+00		
			Vanadium	--	--	--	--	Blood	5.4E-01	--	3.9E-05	5.4E-01		
			Total PCBs	8.3E-08	3.5E-08	2.5E-12	n/a	Immuno	1.4E-01	6.1E-02	--	2.1E-01		
			Furan 2,3,7,8-TCDD TEQ	1.1E-06	1.0E-07	3.4E-11	1.2E-06	Immuno/Develop/Reprod/Dermal	6.1E-01	5.5E-02	1.6E-06	6.6E-01		
			Chemical Total	1.1E-06	1.0E-07	3.4E-11	1.2E-06		5.0E+00	1.3E-01	1.0E+00	6.2E+00		
			Exposure Medium Total				1.2E-06					6.2E+00		
			Surface Soil Total				1.2E-06							
Groundwater	Shallow (Overburden) Groundwater	Shallow (Overburden) Groundwater at the Water Table	Manganese	--	--	--	--	CNS	--	1.5E+01	--	1.5E+01		
			Mercury	--	--	--	--	CNS/Immuno/Kidney	--	7.5E-01	--	7.5E-01		
			Methyl Mercury	--	--	--	--	CNS/Develop	--	1.1E-01	--	1.1E-01		
			Vanadium	--	--	--	--	Blood	--	5.0E+00	--	5.0E+00		
			Dioxin 2,3,7,8-TCDD TEQ	--	1.9E-06	--	1.9E-06	Immuno/Develop/Reprod/Dermal	--	1.0E+00	--	1.0E+00		
			Furan 2,3,7,8-TCDD TEQ	--	1.3E-05	--	1.3E-05	Immuno/Develop/Reprod/Dermal	--	7.1E+00	--	7.1E+00		
			Chloroamiline, p-	--	4.2E-06	--	4.2E-06	Spleen	--	3.7E-01	--	3.7E-01		
			Dibenzofuran	--	--	--	--	Kidney	--	1.1E-01	--	1.1E-01		
			Dichlorobenzene, 1,2-	--	--	--	--	Liver	--	1.4E-01	--	1.4E-01		
			Trichlorobenzene, 1,2,4-	--	5.6E-07	--	n/a	Adrenal	--	1.3E-01	--	1.3E-01		
			Benzene	--	6.7E-07	--	n/a	Blood/Immuno	--	2.1E-01	--	2.1E-01		
			Chlorobenzene	--	--	--	--	Liver	--	1.5E+00	--	1.5E+00		
			Chemical Total	--	1.9E-05	--	1.9E-05		--	3.2E+01	--	3.2E+01		
			Exposure Medium Total				1.9E-05					3.2E+01		
Groundwater Total							1.9E-05					3.2E+01		
Receptor Total							2.1E-05					3.8E+01		

Total Risk Across All Media (MS and GW) <sup>(2)</sup> 2.1E-05Total Hazard Across All Media (MS and GW) <sup>(2)</sup> 3.8E+01**Notes:**

- (1) This table presents the constituents of potential concern with a cancer risk greater than 1E-6 (one-in-one-million) and/or a noncancer hazard index (HI) greater than 0.1.  
(2) The total risks and hazards are based solely on the constituents presented in this table.

CTE = central tendency exposure

ft bgs = feet below ground surface

P&amp;V = particulates and vapors

MS = mixed soil (0 to 10 ft bgs)

GW = groundwater

HI = hazard index

n/a = health endpoint is not a risk-driver for the COC

Total Adrenal HI Across All Media	--
Total Blood HI Across All Media	5.9E+00
Total Body Weight HI Across All Media	--
Total Bone HI Across All Media	--
Total Cardiovascular HI Across All Media	--
Total Central Nervous System (CNS) HI Across All Media	2.1E+01
Total Dermal HI Across All Media	9.1E+00
Total Developmental HI Across All Media	9.1E+00
Total Gastrointestinal HI Across All Media	--
Total Immunological HI Across All Media	1.3E+01
Total Kidney HI Across All Media	3.7E+00
Total Liver HI Across All Media	1.7E+00
Total Reproductive HI Across All Media	8.8E+00
Total Respiratory HI Across All Media	--
Total Spleen HI Across All Media	--

**TABLE 10.4.RME  
RISK SUMMARY**  
**CURRENT/FUTURE TRESPASSER - SEDIMENT/BANK SOIL**  
**REASONABLE MAXIMUM EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Scenario Timeframe:</b> Current/Future (RME)
<b>Receptor Population:</b> Trespasser
<b>Receptor Age:</b> Adolescent (Ages 7-16)

Medium	Exposure Medium	Exposure Point	Constituent of Potential Concern <sup>(1)</sup>	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient						
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total		
SBC Sediment/ Bank Soil (0 to 0.5 ft bgs)	SBC Sediment/ Bank Soil (0 to 0.5 ft bgs)	SBC Sediment/ Bank Soil (0 to 0.5 ft bgs)	Arsenic	1.7E-05	6.4E-06	--	2.4E-05	Cardio/Derm CNS Immuno/Kidney Blood	2.7E-01	9.9E-02	--	3.7E-01		
			Mercury (elemental)	--	--	--	--		1.3E-01	--	--	1.3E-01		
			Mercury (inorganic)	--	--	--	--		6.2E-01	--	--	6.2E-01		
			Vanadium	--	--	--	--		1.4E-01	--	--	1.4E-01		
			Chemical Total	1.7E-05	6.4E-06	--	2.4E-05		1.2E+00	1.0E-01	--	1.3E+00		
			Exposure Medium Total				2.4E-05					1.3E+00		
Surface Soil Total							2.4E-05					1.3E+00		
Receptor Total							2.4E-05					1.3E+00		

Total Risk Across All Media (SED) <sup>(2)</sup> 2.4E-05Total Hazard Across All Media (SED) <sup>(2)</sup> 1.3E+00**Notes:**

(1) This table presents the constituents of potential concern with a cancer risk greater than 1E-6 (one-in-one-million) and/or a noncancer hazard index (HI) greater than 0.1.

(2) The total risks and hazards are based solely on the constituents presented in this table.

RME = reasonable maximum exposure

ft bgs = feet below ground surface

SBC = South Branch Creek

SED = sediment/bank soil

HI = hazard index

n/a = health endpoint is not a risk-driver for the COC

Total Blood HI Across All Media	--
Total Bone HI Across All Media	--
Total Cardiovascular HI Across All Media	--
Total Central Nervous System (CNS) HI Across All Media	--
Total Dermal HI Across All Media	--
Total Developmental HI Across All Media	--
Total Gastrointestinal HI Across All Media	--
Total Immunological HI Across All Media	--
Total Kidney HI Across All Media	--
Total Liver HI Across All Media	--
Total Respiratory HI Across All Media	--

**TABLE 10.4.CTE  
RISK SUMMARY**  
**CURRENT/FUTURE TRESPASSER - SEDIMENT/BANK SOIL**  
**CENTRAL TENDENCY EXPOSURE**  
**LCP Chemicals, Inc. Superfund Site - Linden, New Jersey**

<b>Scenario Timeframe:</b> Current/Future (CTE)
<b>Receptor Population:</b> Trespasser
<b>Receptor Age:</b> Adolescent (Ages 7-16)

Medium	Exposure Medium	Exposure Point	Constituent of Potential Concern <sup>(1)</sup>	Carcinogenic Risk				Non-Carcinogenic Hazard Quotient						
				Ingestion	Dermal	Inhalation	Exposure Routes Total	Primary Target Organ(s)	Ingestion	Dermal	Inhalation	Exposure Routes Total		
SBC Sediment/ Bank Soil (0 to 0.5 ft bgs)	SBC Sediment/ Bank Soil (0 to 0.5 ft bgs)	SBC Sediment/ Bank Soil (0 to 0.5 ft bgs)	Arsenic	3.2E-06	2.4E-06	--	5.6E-06	Cardio/Derm Immuno/Kidney	5.0E-02	3.7E-02	--	n/a		
			Mercury (inorganic)	--	--	--	--		1.2E-01	--	--	1.2E-01		
			Chemical Total	3.2E-06	2.4E-06	--	5.6E-06		2.3E-01	3.9E-02	--	1.2E-01		
			Exposure Medium Total				5.6E-06					1.2E-01		
Surface Soil Total							5.6E-06					1.2E-01		
Receptor Total							5.6E-06					1.2E-01		

Total Risk Across All Media (SED) <sup>(2)</sup> 5.6E-06Total Hazard Across All Media (SED) <sup>(2)</sup> 1.2E-01**Notes:**

(1) This table presents the constituents of potential concern with a cancer risk greater than 1E-6 (one-in-one-million) and/or a noncancer hazard index (HI) greater than 0.1.

(2) The total risks and hazards are based solely on the constituents presented in this table.

CTE = reasonable maximum exposure

ft bgs = feet below ground surface

SBC = South Branch Creek

SED = sediment/bank soil

HI = hazard index

n/a = health endpoint is not a risk-driver for the COC

Total Blood HI Across All Media	--
Total Bone HI Across All Media	--
Total Cardiovascular HI Across All Media	--
Total Central Nervous System (CNS) HI Across All Media	--
Total Dermal HI Across All Media	--
Total Developmental HI Across All Media	--
Total Gastrointestinal HI Across All Media	--
Total Immunological HI Across All Media	--
Total Kidney HI Across All Media	--
Total Liver HI Across All Media	--
Total Respiratory HI Across All Media	--